Alaska Outer Continental Shelf

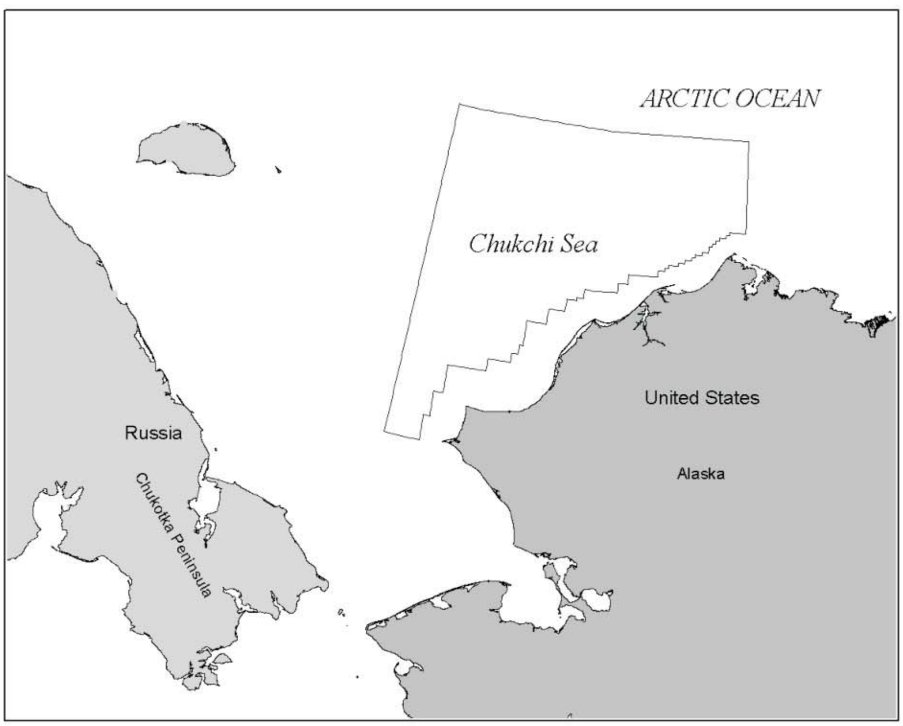
OCS EIS/EA
MMS 2006-060

Chukchi Sea Planning Area

Oil and Gas Lease Sale 193 and Seismic Surveying Activities in the Chukchi Sea

Draft Environmental Impact Statement

Volume II
Tables, Figures, Maps, and Appendices



U.S. Department of the Interior
Minerals Management Service
Alaska OCS Region

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Final Environmental Impact Statement

Volume II
(Tables, Figures, Maps, and Appendices)

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National Marine Fisheries Service

U.S. Department of the Interior
Minerals Management Service
Alaska OCS Region

October 2006

APPENDIX A

INFORMATION,
MODELS AND ASSUMPTIONS
WE USE TO ANALYZE
THE EFFECTS OF AN OIL SPILL
IN THIS EIS

APPENDIX A

A.1 OIL SPILL

INFORMATION, MODELS, AND ASSUMPTIONS

AND

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Appendix A.1: The Information, Models, and Assumptions We Use to Analyze the Effects of Oil Spills in this EIS.

We analyze crude and refined oil spills and their relative impact to environmental, economic, and sociocultural resource areas and the coastline, which could result from offshore oil development in the Chukchi Sea Sale 193 area. Estimating oil-spill occurrence or oil-spill contact is an exercise in probability. Uncertainty exists regarding whether exploration or development will occur at all and if it does the location, number, and size of oil spill(s) and the wind, ice and current conditions at the time of a spill(s). Although some of the uncertainty reflects incomplete or imperfect data, a considerable amount of uncertainty exists simply because it is difficult to predict events 15-40 years into the future.

We make a set of assumptions to analyze the effects of oil spills in a consistent manner. To judge the effect of a large oil spill, we estimate information regarding the type of oil, the general source of an oil spill, the location and size of a spill, the chemistry of the oil, how the oil will weather, how long it will remain, and where it will go. For small spills, we estimate the type of oil and number and size of a spill. We describe the rationale for these assumptions in the following subsections. The rationale for these assumptions is a mixture of project-specific information, modeling results, statistical analysis, and professional judgment. Based on these assumptions, we assume one large spill occurs and then analyze its effects. After we analyze the effects of a large oil spill, we consider the chance of one or more large oil spills ever occurring over the production life of the project. An analysis is done for small spills considering the number and volume of small spills. We assume small spills will occur over the life of the project.

A. Estimates of the Source, Type, and Size of Oil Spills.

Table A.1-1 shows the general size categories, source of a spill(s), type of oil, size of spill(s) in barrels, and the receiving environment we assume in our analysis of the effects of oil spills in this Environmental Impact Statement (EIS) for the Alternative I, the Proposed Action; Alternative III, Corridor I; and Alternative IV, Corridor II. The sources of spills are divided generically into platform or pipeline. The type of crude oil used in this analysis is Alpine composite crude. We divide spills into two general size categories: small spills and large spills. Small spills are those less than (<)1,000 barrels (bbl). Large spills are greater than or equal to (≥)1,000 bbl. Table A.1-1 shows the EIS section where we analyze the effects of large and small spill(s).

A.1. Source and Spill-Size Assumptions. The spill-size assumptions we use for large spills are based on the reported spills from production in the Gulf of Mexico and Pacific outer continental shelf (OCS) and what we believe is likely to occur. We estimate the likely large spill size based on the median spill size in the OCS from 1985-1999. We use Gulf of Mexico and Pacific spill sizes because until recently, no large spills had occurred on the Alaska North Slope. Small spills are based on the historic spill sizes from production on the onshore Alaska North Slope from 1989-2000. Stakeholders, including the North Slope Borough Science Advisory Committee, have stated that they would like spill rates from the Alaska North Slope used in Alaska OCS EIS'. The assumption is that Alaska North Slope spills occur in more similar environments to the offshore Beaufort and Chukchi seas than the Gulf of Mexico and Pacific OCS.

A.1.a. Source and Type of Oil Spills. The source of large oil spills is generalized into two general categories: platforms and pipelines. The source is considered the place where large oil spills could originate from. Large platform spills include spills from wells in addition to any storage tanks located on the platform. Large pipeline spills include spills from the riser and offshore pipeline to the shore. Large platform spills are assumed to be either crude oil or diesel oil from storage tanks. Large pipeline spills are assumed to be crude oil. From oil samples recovered from wells, the Chukchi Sea seems to be characterized by relatively low sulfur (<18%), high-gravity (≥35^{o}) American Petroleum Institute (API) crude oils (Sherwood et al., 1998:129). We looked for Alaska North Slope crude oils with similar API values and that had laboratory weathering data. Alpine composite crude oil has an API of 35^{o} and was chosen to be representative for the oil-weathering simulations.

A.1.b. Historical Crude Oil Spills Greater Than or Equal to 1,000 Barrels on the Outer Continental Shelf. The Gulf of Mexico and Pacific OCS data show that the most likely location of a spill is from a pipeline or a platform. The median size of a crude oil spill ≥1,000 bbl from a pipeline from 1985-1999 on the OCS is 4,600 bbl, and the average is 6,700 bbl (Anderson and LaBelle, 2000). The median spill size for a platform on the OCS over the entire record from 1964-1999 based on trend analysis is 1,500 bbl, and the average is 3,300 bbl (Anderson and LaBelle, 2000). For purposes of analysis, we use the median spill size as the likely large spill size.

A.1.c. Historical Crude Oil Spills from Blowouts on the Outer Continental Shelf and Alaska North Slope. We consider blowouts to be unlikely events. Blowout events often are equated with catastrophic spills; however, in recent years very few blowout events have resulted in spilled oil, and the volumes spilled often are small. All five of the blowout events ≥1,000 bbl in the OCS database occurred between 1964 and 1970 (Table A.1-2). Following the Santa Barbara blowout in 1969, amendments to the OCS Lands Act and implementing regulations significantly strengthened safety and pollution-prevention requirements for offshore activities. Well-control training, redundant pollution-prevention equipment, and subsurface safety devices are among the provisions that were adopted in the regulatory program.

From 1971-2005, 276 exploration and development blowouts occurred, on the OCS while drilling approximately 34,000 wells and producing 15 billion barrels (Bbbl) of oil. From 1971-2005, 33 of those 276 blowouts resulted in oil spills of crude or condensate with the amount of oil spilled ranging from <1 bbl to 350 bbl. The total volume spilled from those 33 blowouts is approximately 1,600 bbl. The volume spilled from blowouts was approximately 0.0000001% of the volume produced. There were no spills ≥1,000 bbl from blowouts in the last 35 years on the OCS. Table A.1-3 shows the U.S. Gulf of Mexico OCS blowout frequencies as reported by Holland (1997). These frequencies range from 5.9×10^{-3} blowouts per well drilled for exploratory drilling to 5×10^{-5} blowouts per well for production.

The blowout record for the Alaska North Slope remains the same as previously reported in USDOI, MMS (2003a) and is summarized. Of the 10 blowouts, 9 were gas and 1 was oil. The oil blowout in 1950 resulted from drilling practices that would not be relevant today. A third study confirmed that no crude oil spills ≥100 bbl from blowouts occurred from 1985-1999 (Hart Crowser, Inc., 2000). Scandpower (2001) used statistical blowout frequencies modified to reflect specific field conditions and operative systems at Northstar. This report concludes that the blowout frequency for drilling the oil-bearing zone is 1.5×10^{-5} per well drilled. This compares to a statistical blowout frequency of 7.4×10^{-5} per well (for an average development well). This same report estimates that the frequency of oil quantities per well drilled for Northstar for a spill greater than (>)130,000 bbl is 9.4×10^{-7} per well.

A.1.d. Historical Exploration Spills on the Beaufort and Chukchi Outer Continental Shelf. The MMS estimates the chance of a large (≥1,000 bbl) oil spill from exploratory activities to be very low. On the Beaufort and Chukchi OCS, the oil industry drilled 35 exploratory wells. During the time of this drilling, industry has had 35 small spills totaling 26.7 bbl or 1,120 gallons (gal). Of the 26.7 bbl spilled, approximately 24 bbl were recovered or cleaned up. Table A.1-4 shows the exploration spills on the Beaufort and Chukchi OCS. Small (25 bbl or less) operational spills of diesel, refined fuel, or crude oil may occur. The MMS estimates this could be a typical scenario during exploratory drilling in the Beaufort and Chukchi seas. These small spills often are onto containment on platforms, facilities or gravel islands or onto ice and may be cleaned up.

No exploratory drilling blowouts have occurred on the Arctic offshore or the Alaskan OCS. Since 1971-2005, industry has drilled approximately 172 exploration wells in the Pacific OCS, 51 in the Atlantic OCS, 13,142 in the Gulf of Mexico OCS, and 98 in the Alaska OCS, for a total of 13,463 exploration wells. From 1971-2005, there were 66 blowouts during exploration drilling. Four exploration blowout oil spills, 200, 100, 11 and 0.8 bbl, respectively, have occurred from drilling those wells. No large spills (≥1,000 bbl) have occurred from 1971-2005 during exploration drilling. Therefore, approximately 13,000 wells have been drilled, and four spills resulted in crude reaching the environment from blowouts during exploration.

B. Behavior and Fate of Crude Oils.

There are scientific laboratory data and field information from accidental and research oil spills about the behavior and fate of crude oil. We discuss the background information on the fate and behavior of oil in arctic environments and its behavior and persistence properties along various types of shorelines. We also make several assumptions about oil weathering to perform modeling simulations of oil weathering specific to the size spills we estimate for analysis purposes.

B.1. Generalized Processes Affecting the Fate and Behavior of Oil. Several processes alter the chemical and physical characteristics and toxicity of spilled oil. Collectively, these processes are referred to as weathering or aging of the oil and, along with the physical oceanography and meteorology, the weathering processes determine the oil's fate. The major oil-weathering processes are spreading, evaporation, dispersion, dissolution, emulsification, microbial degradation, photochemical oxidation, and sedimentation to the seafloor or stranding on the shoreline (Payne et al., 1987; Boehm, 1987; Lehr, 2001) (Figs. A.1-1 and A.1-2).

The physical properties of a crude oil spill, the environment it occurs in, and the source and rate of the spill will affect how an oil spill behaves and weathers. Tables A.1-5, A.1-6 and A.1-7 show the physical properties of Alpine composite crude oil and Figure A.1-3 shows the gas chromatogram.

The environment in which a spill occurs, such as the water surface or subsurface, spring ice-overflow, summer open-water, winter under ice, or winter broken ice, will affect how the spill behaves. In ice-covered waters, many of the same weathering processes are in effect; however, the sea ice changes the rates and relative importance of these processes (Payne, McNabb, and Clayton, 1991).

After a spill occurs, spreading and advection begin. The slick spreads horizontally in an elongated pattern oriented in the direction of wind and currents and nonuniformly into thin sheens (0.5-10 micrometers [μm]) and thick patches (0.1-10 millimeters[mm]) (Elliott, 1986; Elliott, Hurford, and Penn, 1986; Galt et al., 1991). In the cooler arctic waters, oil spills spread less and remain thicker than in temperate waters because of differences in the viscosity of oil due to temperature. This property will reduce spreading. An oil spill in broken ice would spread less and would spread between icefloes into any gaps greater than about 8-15 centimeters (cm) (Free, Cox, and Shultz, 1982).

The presence of broken ice tends to slow the rate of spreading (S.L. Ross Environmental Research Ltd. and D.F. Dickens Assocs. Ltd., 1987). Oil spreading and floe motion were studied to determine how floe motion, ice concentration, slush concentration, and oil types affect spreading in ice. Spreading rates were lowered as ice concentrations increased; but for ice concentrations <20-30%, there was very little effect. Slush ice rapidly decreased spreading. If the ice-cover motion increased, then spreading rates increased, especially with slush ice present (Gjosteen and Loset, 2004). Oil spilled beneath a wind-agitated field of pancake ice would be pumped up onto the surface of the ice or, if currents are slow enough, bound up in or below the ice (Payne et al., 1987). Once oil is encapsulated in ice, it has the potential to move distances from the spill site with the moving ice.

Evaporation results in a preferential loss of the lighter, more volatile hydrocarbons, increasing density and viscosity and reducing vapor pressure and toxicity (Mackay, 1985). Evaporation of volatile components accounts for 30-40% of crude loss, with approximately 25% occurring in the first 24 hours (Fingas, Duval, and Stevenson, 1979; National Research Council, 1985). The initial evaporation rate increases with increasing wind speeds, temperatures, and sea state. Evaporative processes occur on spills in ice-covered waters, although at a lower rate (Jordan and Payne, 1980). Fuel oils (diesel) evaporate more rapidly than crude, on the order of 13% within 40 hours at 23 °Celsius (73° Fahrenheit); a larger overall percentage of diesel eventually will evaporate. Evaporation decreases in the presence of broken ice and stops if the oil is under or encapsulated in the ice (Payne et al., 1987). The lower the temperature, the less crude oil evaporates. Both Prudhoe Bay and Endicott crudes have experimentally followed this pattern (Fingas, 1996). Oil between or on icefloes is subject to normal evaporation. Oil that is frozen into the underside of ice is unlikely to undergo any evaporation until its release in spring. In spring as the ice sheet deteriorates, the encapsulated oil will rise to the surface through brine channels in the ice. As oil is released to the surface, evaporation will occur.

Dispersion of oil spills occurs from wind, waves, currents, or ice. Dispersion is an important breakup process that results in the transport of small oil particles (0.5 µm-several mm) or oil-in-water emulsions into the water column (Jordan and Payne, 1980; National Research Council, 1985). Droplets <0.5 mm or less rise slowly enough to remain dispersed in the water column (Payne and McNabb, 1985). The dispersion rate is directly influenced by sea state; the higher the sea state and breaking waves, the more rapid the dispersion rate (Mackay, 1985). The presence of broken ice promotes dispersion (Payne et al., 1987). Any waves within the ice pack tend to pump oil onto the ice. Some additional oil dispersion occurs in dense, broken ice through floe-grinding action. More viscous and/or weathered crudes may adhere to porous icefloes, essentially concentrating oil within the floe field and limiting the oil dispersion.

Dissolution results in the loss of soluble, low-molecular-weight aromatics such as benzene, toluene, and xylenes (National Research Council, 1985). low-molecular weight aromatics, which are acutely toxic, rapidly dissolve into the water column. Dissolution, however, is very slow compared with evaporation; most volatiles usually evaporate rather than dissolve. Dissolved-hydrocarbon concentrations underneath a slick, therefore, tend to remain <1 part per million (Malins and Hodgins, 1981). Dissolved-hydrocarbon concentration can increase due to the promotion of dispersion by broken ice (Payne et al., 1987).

Emulsified oil results from oil incorporating water droplets in the oil phase and generally is referred to as mousse (Mackay, 1982). The measurable increases in viscosity and specific gravity observed for mousse change its behavior, including spreading, dispersion, evaporation, and dissolution (Payne and Jordan, 1985). The formation of mousse slows the subsequent weathering of oil. The presence of slush ice and turbulence promotes oil-in-water emulsions (Payne et al., 1987).

Most of the oil droplets suspended in the water column eventually will be degraded by bacteria in the water column or deposited on the seafloor. The rate of sedimentation depends on the suspended load of the water, the water depth, turbulence, oil density, and incorporation into zooplankton fecal pellets.

Subsurface blowouts or gathering-pipeline spills disperse small oil droplets and entrained gas into the water column. With sufficient gas, turbulence, and the necessary precursors in the oils, mousse forms by the time the oil reaches the surface (Payne, 1982; Thomas and McDonagh, 1991). For subsurface spills, oil rises rapidly to the water surface to form a slick. Droplets <50 microns in size, generally 1% of the blowout volume, could be carried several kilometers down current before reaching the water surface (Environmental Sciences Limited, 1982). Blowout simulations show that convective cells set up by the rising oil and gas plume result in concentric rings of waves around the central plume. Surface currents within the ring should move outward, and surface currents outside the ring should move inward, resulting in a natural containment of some oil.

The subsurface release of oil droplets increases slightly the dissolution of oil, but the rapid rise of most oil to the surface suggests that the increase in dissolution—as a percentage of total spill volume—is fairly small. The resulting oil concentration, however, could be substantial, particularly for dispersed oil in subsurface plumes.

An oil spill that moved under landfast ice would follow this sequence:

(1) The oil will rise to the under-ice surface and spread laterally, accumulating in the under ice cavities (Glaeser and Vance 1971; NORCOR, 1975; Martin, 1979; Comfort et al., 1983).
(2) For spills that occur when the ice sheet is still growing, the pooled oil will be encapsulated in the growing ice sheet (NORCOR, 1975; Keevil and Ramseier, 1975; Buist and Dickens, 1983; Comfort et al., 1983). In the spring as the ice begins to deteriorate, the encapsulated oil will rise to the surface through brine channels in the ice (NORCOR, 1975; Purves, 1978; Martin, 1979; Kisil, 1981; Dickins and Buist, 1981; Comfort et al., 1983).

The spread of oil under the landfast ice may be affected by the presence of currents, if the magnitude of those currents is large enough. A field study near Cape Parry in the Northwest Territories reported that currents up to 10 cm per second (cm/sec) were present. This current was insufficient to strip oil from under the ice sheet after the oil had ceased to spread (NORCOR, 1975). Laboratory tests have shown that currents in excess of 15-25 cm/sec are required to strip oil from under-ice depressions (Cammaert, 1980; Cox et al., 1980). Current speeds in the nearshore Beaufort generally are <10 cm/sec during winter (Weingartner and Okkonen 2001). The area of contamination for oil under ice could increase if the ice were to move. Because the nearshore Beaufort and the very nearshore Chukchi is in the landfast ice area, the spread of oil due to ice movement would not be anticipated until spring breakup.

Prince et al. (2003) discuss three northern spills and demonstrate that photo-oxidation and biodegradation play an important role in the long-term weathering of crude oils. Photo-oxidation and biodegradation would continue to weather the oil remaining.

Alpine composite crude oil will emulsify readily to form stable emulsions. Emulsification of some crude oils is increased in the presence of ice. With floe grinding, it is likely that Alpine crude may form mousse within a few hours, an order of magnitude more rapidly than in open water.

B.2. Oil-Spill Persistence. S.L. Ross et al. (2003) completed a study on the persistence of oil spilled on the surface of the water. The following definition of oil-slick persistence was used for this study: An oil slick is considered to be persisting on the sea surface when it can be observed to be a coherent slick, or perceptible segments of a coherent slick, by normal methods of slick detection, such as aerial surveillance.

They surveyed reports of oil spill incidents throughout the world was completed. Major oil spill incidents from the *Torrey Canyon* in 1967 to the *Erika* in 1999/2000 have generated an immense amount of literature, but the information on oil-slick persistence (the critical parameter to this study) has seldom been detailed. The number of useable incidents was reduced, from an initial 154 to 84, by first removing the spills that occurred in inland or restricted waters (ports and harbors) then reduced further to 20 by applying other criteria (information availability, crude oil only). Of the final incident list, 13 were releases from tankers and 7 were oil-well blowouts. In addition to these, a database of 12 experimental spills was compiled, for which good persistence data existed. These experimental spills all involved much smaller oil volumes. Correlation analyses were carried out on three data sets and, although they by no means gave definitive results because of the small size of the sets, they did indicate the relative importance of different variables and their dependencies for each of the three data sets. Regression analysis with the three data sets showed that:

1. Wind speed did not have a statistically significant effect on persistence (as defined in this study).
2. Countermeasures effort did not have a statistically significant effect on persistence.
3. The following regressions of historic spill data should be used by MMS to estimate the mean persistence of slicks on open water for modeling purposes:

For spills $\geq$ 1,000 bbl in size:
$PD_{\geq 1000bbl} = 0.0001S - 1.32T + 33.1$
Where,
PD = Spill persistence in days
S = Spill size in bbl
T = Water temperature in degrees Celsius

How long an oil spill persists on water based on these equations ranges from about 29 days in summer to 34 days in winter for a 1,500- or 4,600-bbl spill. These equations are based on limited spills of this size, as most of the spills in the database are either a magnitude of order larger or smaller and these estimates should be used with caution. Refinement of quantitative estimates of oil-slick persistence will depend on collecting further information on spills and their lifetime as slicks upon the water. Currently, this information is not routinely collected during the oil-spill response.

B.3. Shoreline Type. The shoreline habitats and the estimation of the behavior and persistence of oil on intertidal habitats is based on an understanding of the dynamics of the coastal environments, not just the substrate type and grain size. The sensitivity of a particular intertidal habitat is an integration of the following factors: (1) shoreline type (substrate, grain size, tidal elevation, origin); (2) exposure to wave and tidal energy; (3) biological productivity and sensitivity; and (4) ease of cleanup. All of these factors are used to determine the relative sensitivity of intertidal habitats. Key to the sensitivity ranking is an understanding of the relationships between physical processes; substrate; shoreline type; product type; fate and effect; and sediment-transport patterns. The intensity of energy expended on a shoreline by wave action, tidal currents, and river currents directly affects the persistence of stranded oil. The need for shoreline-cleanup activities is determined, in part, by the slowness of natural processes in removal of oil stranded on the shoreline. These concepts have been used in the development of the ESI, which ranks shoreline environments as to their relative sensitivity to oil spills, potential biological injury, and ease of cleanup. Generally speaking, areas exposed to high levels of physical energy, such as wave action and tidal currents, and low biological activity rank low on the scale, whereas sheltered areas with associated high biological activity rank highest. A comprehensive shoreline habitat-ranking system has been developed for the entire United States. The shoreline habitats delineated on the Northwest Alaska and North Slope of Alaska are listed in order of increasing sensitivity to spilled oil:

1A) Exposed Rocky Shore
1B) Exposed Solid Manmade Structure
3A) Fine- to Medium-Grained Sand Beaches
3C) Tundra Cliffs
4) Coarse-Grained Sand Beaches
5) Mixed Sand and Gravel Beaches
6A) Gravel Beaches
7) Exposed Tidal Flats
8A) Sheltered Rocky Shores and Sheltered Scarps in Bedrock, Mud, or Clay
8B) Sheltered, Solid Manmade Structures
8E) Peat Shorelines
9A) Sheltered Tidal Flats
9B) Sheltered Vegetated Low Banks
10A) Salt- and Brackish-Water Marshes
10E) Inundated Low-Lying Tundra
U) Unranked

The ESI rankings progress from low to high susceptibility to oil spills. In many cases, the shorelines also are ranked with multiple codes such as 10E/7. The first number is the most landward shoreline type, saltmarsh, with exposed tidal flats being the shoreline type closest to the water. For purposes of analysis, we use the shoreline type closest to the water. Table A.1-8 shows the percentage length of each ESI ranking for the most seaward shoreline type for each land segment in United States, Alaska waters. No ESI data are available for Russia.

The percentage length of each ESI type was derived by determining the length of coastline for each land segment. The length of each ESI type was determined for that land segment and then calculated as a percentage of the total land segment length.

B.4. Assumptions about Large Oil-Spill Weathering:

- The crude oil properties will be similar to Alpine composite crude oil (Table A.1-5, 6, and 7).
- The size of the crude or diesel spill is 1,500 or 4,600 bbl.
- The wind, wave, and temperature conditions are as described.
- The spill is a surface spill.
- Meltout spills occur into 50% ice cover.
- The properties predicted by the model are those of the thick part of the slick.
- The spill occurs as an instantaneous spill over a short period of time.
- The fate and behavior are as modeled (Tables A.1-9, 10 and 11).
- The oil spill persists for up to 30 days in open water.

Uncertainties exist, such as:

- the actual size of the oil spill or spills, should they occur;

- whether the spill is instantaneous or chronic;
- wind, current, wave, and ice conditions at the time of a possible oil spill; and
- the crude oil properties at the time of a possible spill.

B.5. Modeling Simulations of Oil Weathering. To judge the effect of an oil spill, we estimate information regarding how much oil evaporates, how much oil is dispersed and how much oil remains after a certain time period. We derive the weathering estimates of Alpine Composite crude oil and arctic diesel from modeling results from the SINTEF Oil Weathering Model (OWM) Version 3.0 (Reed et al., 2005a) for up to 30 days.

B.5.a. Alpine Composite Laboratory Test Results. Alpine oil composite was chosen for simulations of oil weathering, because it is a light crude oil that falls within the category of 35-40° API oils estimated to occur in the Sale 193 area. On July 21, 2001, Conoco Phillips gathered a crude oil sample from the Alpine central processing facility. The oil sample was named Alpine Composite. This sample was sent to SINTEF for Laboratory bench mark testing as described in Daling and Strom (1999) and Reed et al. (2005b). The Alpine Composite is a paraffinic crude oil, with a density of 0.834 grams per milliliter. The Alpine Composite contains a relatively large amount of lower molecular-weight compounds. The Alpine Composite contains approximately 4% wax and <0.1 % asphaltenes by weight. The Alpine composite has a high amount of lighter components, and evaporative loss will yield great changes in physical properties for the oil. The Alpine Composite has an initial pour point at –18 °C (-0.4 °F). As the Alpine composite has a large evaporative loss, it also displays the greatest change in pour point with evaporation. The low pour points are due to high amounts of light components in the oils, keeping heavier components as wax in solution. Upon evaporative loss, the chemical composition changes, and as, for example, wax is allowed to precipitate, the pour point is getting higher. The maximum water content of the Alpine Composite water-in-oil-emulsions is high (all are above 80%). The rate of formation is relatively fast, after approximately 30 minutes the Alpine Composite water in oil-emulsions reached a water content above 50 % by volume. The fast emulsification rates are typical for paraffinic crude oils.

B.5.b. Alpine Composite Simulations of Oil Weathering. We use the SINTEF OWM to perform simulations of oil weathering. The SINTEF OWM changes both oil properties and physical properties of the oil. The oil properties include density, viscosity, pour point, flash point, and water content. The physical processes include spreading, evaporation, oil-in-water dispersion, and water uptake. The SINTEF OWM Version 3.0 performs a 30-day time horizon on the model-weathering calculations, but with a warning that the model is not verified against experimental field data for more than 4-5 days. The SINTEF OWM has been tested with results from three full-scale field trials of experimental oil spills (Daling and Strom, 1999).

The SINTEF OWM does not incorporate the effects of the following:

- currents;
- beaching;
- containment;
- photo-oxidation;
- microbiological degradation;
- adsorption to particles; and
- encapsulation by ice.

The simulated Alpine composite crude oil spill sizes are 1,500 or 4,600 bbl. The diesel oil spill size is 1,500 bbl. We simulate two general scenarios: one in which the oil spills into open water and one in which the oil freezes into the ice and melts out into 50% ice cover. We assume open water is June through October, and a winter spill melts out in June. We assume the spill starts at the surface. For open water, we model the weathering of the 1,500- or 4,600-bbl spills as if they are instantaneous spills. For the meltout spill scenario, we model the entire spill volume as an instantaneous spill. Although different amounts of oil could melt out at different times, the MMS took the conservative approach, which was to assume all the oil was released at the same time. We report the results at the end of 1, 3, 10, and 30 days.

For purposes of analysis, we look at the mass balance of the oil spill; how much is evaporated, dispersed and remaining. Tables A.1-9, 10, and 11 summarize the results we assume for the amount evaporated, dispersed, and remaining for Alpine Composite crude oil and diesel oil in our analysis of the effects of oil on environmental and sociocultural resources. The Alpine Composite contains a relatively large amount of lower molecular-weight compounds and approximately 29% and 33% of its original volume evaporated within 1 and 3 days, respectively, at both summer and winter temperatures. Alpine Composite will form water-in-oil-emulsion with a maximum water content of 80% at both winter and summer temperatures, yielding approximately five times the original spill volume (Reed et al. 2005b). At the average wind speeds over the Sale 193 area, dispersion is slow, ranging from 0-16%. However, at higher wind speeds (e.g., 15 m/s wind speed) the slick will be almost removed from the sea surface within a day.

C. Estimates of Where a Large Offshore Oil Spill May Go.

We study how and where large offshore spills move by using a computer model called the Oil-Spill-Risk Analysis model (Smith et al., 1982). By large, we mean spills ≥1,000 bbl. This model analyzes the likely paths of oil spills in relation to biological, physical, and sociocultural resource areas. The model uses information about the physical environment, including files of wind, sea ice, and current data. It also uses the locations of environmental resource areas, sociocultural resource areas, barrier islands, and the coast that are within the model study area.

C.1. Inputs to the Oil-Spill-Trajectory Model:

- study area
- arctic seasons
- location of the coastline
- location of environmental resource areas
- location of land segments
- location of boundary segments
- location of hypothetical launch areas
- location of hypothetical pipelines and transportation assumptions
- current and ice information from two general circulation models
- wind information

C.1.a. Study Area and Boundary Segments. Map A.1-1 shows the Chukchi Sea Sale 193 oil-spill-trajectory study area extends from lat. 68º N. to 75º N. and from long. 134° W. to 174° E. The study area is formed by 38 boundary segments and the Beaufort and Chukchi seas (United States and Russia) coastline. The boundary segments are vulnerable to spills in both arctic summer and winter. We chose a study area large enough to mostly contain the paths of 2,700 hypothetical oil spills each through as long as 360 days.

C.1.b. Arctic Seasons. We define three time periods for the trajectory analysis of oil spills. The first is from June 1 through October 31 and generally represents open water or arctic summer. We ran 1,125 trajectories in the arctic summer. The second is from November 1 through May 31 and generally represents ice cover or arctic winter. We also ran 1,575 trajectories in the arctic winter. The last is annual, which is from January through December, and represents the entire year. We ran 2,700 trajectories over the annual season.

C.1.c. Locations of Environmental Resource Areas. Maps A.1-2a, A.1-2b, A.1-2c and A.1-2d show the location of the 84 environmental resource areas (ERA's). These ERA's represent concentrations of wildlife, subsistence-hunting areas, and subsurface habitats. Our analysts designate these ERA's. The analysts also designate in which months these ERA's are vulnerable to spills. The names or abbreviations of the ERA's and their months in which they are vulnerable to spills are shown in Table A.1-12. Information regarding the general and specific ERA's for birds, subsistence resources, and whales is found in Tables A.1-13, 14 and 15. We also include Land as an additional environmental resource area. Land is the entire study area coastline and is made up of the individual land segments (LS's) 1 through 126 which are described below.

C.1.d. Location of Land Segments. The coastline was further analyzed by dividing the Chukchi (United States and Russia) and Beaufort seas coastline into 126 land segments. Maps A.1-3a, A.1-3b and A.1-3c show the location of these 126 land segments. Land segments are vulnerable to spills in both summer and winter. The model defines summer as June through October and winter from November through May. The land segment identification numbers (ID) and the geographic place names within the land segment are shown in Table A.1-16. Some land segments were grouped together to represent geographic places. These grouped land segments are shown on Map A.1-3d and are as follows:

Grouped Land Segment Name	Land Segment ID's
Wrangel Island Nature Reserve Natural World Heritage Site (Russia)	1-12
Bering Land Bridge National Preserve	41, 42, 45-50
Selawik National Wildlife Refuge	56
Cape Krusenstern National Monument	57-59
Alaska Maritime National Wildlife Refuge	62, 63, 65
National Petroleum Reserve Alaska	76, 77, 80-83, 86-93
Kasegaluk Lagoon Special Area (NPRA)	76-77
Teshekpuk Lake Special Area (NPRA)	89-93
Arctic National Wildlife Refuge	103-111
Ivvavik National Park (Canada)	112-117
Kendall Island Bird Sanctuary (Canada)	124-125
Russia Chukchi Coast	1-39
United.States Chukchi Coast	40-84
Unites States Beaufort Coast	85-111
Canada Beaufort Coast	112-126

C.1.e. Location of Proposed and Alternative Hypothetical Launch Areas and Hypothetical Pipeline Segments. The MMS does not know where companies may lease, explore and eventually develop resources. Although we know some areas are more likely than others, we need to look at all of the Sale area that are open to leasing and cover those areas in an oil spill analysis. The maps of launch areas and pipeline segments are hypothetical locations meant to cover the Sale 193 area for analysis and are not meant to represent or suggest any particular development scenario.

Map A-4a shows the location of the 13 hypothetical launch areas (LA1-LA13) and 11 hypothetical pipeline segments (P1-P11) from 5 hypothetical pipelines, the sites where large oil spills could originate, if they were to occur. Pipeline locations are entirely hypothetical. They are not meant to represent five proposed pipelines nor any real or planned pipeline locations. They are spaced along the coast to evaluate differences in oil-spill trajectories from different locations along the coast.

Hypothetical launch points were spaced at one-tenth-degree intervals in the north-south direction (about 11.25 kilometers [km]) and one-third-degree intervals in the east-west direction (about 12.67 km). At this resolution, there were 1,002 total launch points in space, grouped into 13 launch areas (LA1-LA13).

A total of 2,700 trajectories (1,575 in winter; 1,125 in summer) from each hypothetical launch point over the 15 years of wind data (1982-1996), and results of these trajectory simulations were combined to represent platform spills from 13 launch areas (LA1 through LA13 Map A.1-4a). LA1 through LA3 are >150 mi offshore. LA4 through LA7 are approximately 90-150 mi offshore. LA9 through LA13 are approximately 30-90 mi offshore. Pipeline spills were represented by 2,700 trajectories (1,575 in winter; 1,125 in summer) launched from each grid point along each pipeline segment (P1 through P11, Map A.1-4a).

Maps A.1-4b and Map A.1-4c show the location of the launch areas and pipelines for Alternative III and IV, respectively, to indicate where launch points would be removed. Table A.1-17 shows the transportation assumptions for the launch areas and their associated pipelines.

For Sale 193 Alternative I, we assume no oil large spills occur during exploration activities. Development/production activities for Sale 193 could occur in any of the launch areas (LA1-LA13) or along any of the pipeline segments (P1-P11).

C.1.f. Current and Ice Information from a General Circulation Model. For the Chukchi Sea Sale 193, we use two general circulation models to simulate currents ($U_{current}$) or ice (U_{ice}), depending on whether the location is nearshore or offshore.

C.1.f(1) Offshore. Offshore of the 10- to 20-meter (m) bathymetry contour, the wind-driven and density-induced ocean-flow fields and the ice-motion fields are simulated using a three-dimensional, coupled, ice-ocean hydrodynamic model (Haidvogel, Hedstrom, and Francis, 2001). The model is based on the ocean model of Haidvogel, Wilkin, and Young (1991) and the ice models of Hibler (1979) and Mellor and Kantha (1989). This model simulates flow properties and sea-ice evolution in the western Arctic during the years 1982-1996. The coupled system uses the S-Coordinate Rutgers University Model (SCRUM) and Hibler viscous-plastic dynamics and the Mellor and Kantha thermodynamics. It is forced by daily surface geostrophic winds and monthly thermodynamic forces. The model is forced by thermal fields for the years 1982-1996. The thermal fields are interpolated in time from monthly fields. The location of each trajectory at each time interval is used to select the appropriate ice concentration. The pack ice is simulated as it grows and melts. The edge of the pack ice is represented on the model grid. Depending on the ice concentration, either the ice or water velocity with wind drift from the stored results of the Haidvogel, Hedstrom, and Francis (2001) coupled ice-ocean model is used. A major assumption used in this analysis is that the ice-motion velocities and the ocean daily flows calculated by the coupled ice-ocean model adequately represent the flow components. Comparisons with data illustrate that the model captures the first-order transport and the dominant flow (Haidvogel, Hedstrom, and Francis, 2001).

C.1.f(2) Nearshore. Inshore of the 10- to 20-m bathymetry contour in the Beaufort Sea, $U_{current}$ is simulated using a two-dimensional (2D) hydrodynamic model developed by the National Oceanic and Atmospheric Administration (NOAA) (Galt, 1980, Galt and Payton, 1981). This model does not have an ice component. The 2D model incorporated the barrier islands in addition to the coastline. The model of the shallow water is based on the wind forcing and the continuity equation. The model was originally developed to simulate wind-driven, shallow-water dynamics in lagoons and shallow coastal areas with a complex shoreline. The solutions are determined by a finite element model, where the primary balance is between the wind forcing friction, the pressure gradients, coriolis accelerations, and the bottom friction. The time dependencies are considered small, and the solution is determined by iteration of the velocity and sea level equations, until the balanced solution is calculated. The wind is the primary forcing function, and a sea level boundary condition of no anomaly produced by the particular wind stress is applied far offshore, the northern boundary of the oil-spill-trajectory analysis domain. An example of the currents simulated by this model for a 10-m/sec wind is shown in Figure A.1-4.

The results of the model were compared to current meter data from the Endicott Environmental Monitoring Program to determine if the model was simulating the first order transport and the dominant flow. The model simulation was similar to the current meter velocities during summer. Example time series from 1985 show the current flow at Endicott Station ED1 for the U (east-west) and V (north-south) components plotted on the same axis with the current derived from the NOAA model for U and V (Der-U and Der-V). The series show many events that coincide in time, and that the currents derived from the NOAA model generally are in good correspondence with the measured currents. Some of the events in the measured currents are not particularly well represented, and that probably is due to forcing of the current by something other than wind, such as low frequency alongshore wave motions.

C.1.f(3) Landfast Ice Mask. In both the offshore and nearshore models, we added an ice mask within the 0-m and approximately 10- to 20-m water-depth contours to simulate the observed shorefast-ice zone. For each month October through June we apply the monthly ice mask, one for each of those months. For the Beaufort Sea and a portion of the Chukchi Sea the landfast ice mask was derived from the minimum landfast ice observed each month from October to June in a study titled *Mapping and Characterization of Recurring Spring Leads and Landfast ice in the Beaufort and Chukchi Seas* (Eiken et al., 2006). For the southern Chukchi to the Bering Strait the landfast ice mask was taken from Stringer, Barrett, and Schreurs (1980) and was applied from December to May. he Canadian Beaufort minimum landfast ice limit was taken from Arctic Environmental Sensitivity Atlas System produced by

Environment Canada (2000) and is applied October to June. The documentation in the Arctic Environmental Atlas describes the sources of that data as follows:

1. ATMOSPHERIC ENVIRONMENT SERVICE. 1974 to 1986. Canadian Ice Charts. Ice Forecasting Central, Environment Canada, Ottawa.

2. CANADA CENTRE FOR REMOTE SENSING. 1973 to 1983. Selected LANDSAT Imagery. Energy, Mines and Resources Canada, Ottawa.

3. SPEDDING, L.G. and B.W. DANIELEWICZ. 1983. Artificial Islands and Their Effect on Regional Landfast Ice Conditions in the Beaufort Sea. Joint Report Esso Resources Canada Limited and Dome Petroleum Limited, Calgary.

For the Russian Chukchi coast landfast minimum, we reviewed monthly National Ice Center data in ArcGIS for the period 1979-2004. We applied a query to distinguish landfast ice. We conservatively placed the minimum landfast ice line between the 10- and 20-m contour for the months in which landfast ice was present along the coast (October to June). U_{ice} is zero for the landfast ice mask for the months in which it is applied.

C.1.g. Wind Information. We use 15 of the 17-year reanalysis of the wind fields provided to us by Rutgers. The TIROS Operational Vertical Sounder (TOVS) has flown on NOAA polar-orbiting satellites since 1978. Available from July 7, 1979, through December 31, 1996, and stored in Hierarchical Data Format, the TOVS Pathfinder (Path-P) dataset provides observations of areas poleward of lat. 60° N. at a resolution of approximately 100 x 100 km. The TOVS Path-P data were obtained using a modified version of the Improved Initialization Inversion Algorithm (3I) (Chedin et al., 1985), a physical-statistical retrieval method improved for use in identifying geophysical variables in snow- and ice-covered areas (Francis, 1994). Designed to address the particular needs of the polar-research community, the dataset is centered on the North Pole and has been gridded using an equal-area azimuthal projection, a version of the Equal-Area Scalable Earth-Grid (EASE-Grid) (Armstrong and Brodzik, 1995).

Preparation of a basinwide set of surface-forcing fields for the years 1980 through 1996 has been completed (Francis, 1999). Improved atmospheric forcing fields were obtained by using the bulk boundary-layer stratification derived from the TOVS temperature profiles to correct the 10-m level geostrophic winds computed from the National Center for Environmental Prediction Reanalysis surface pressure fields. These winds are compared to observations from field experiments and coastal stations in the Arctic Basin and have an accuracy of approximately 10% in magnitude and 20 degrees in direction.

C.1.h. Oil-Spill Scenario. For purposes of this trajectory simulation, all spills occur instantaneously. For each trajectory simulation, the start time for the first trajectory was the first day of the season (winter or summer) of the first year of wind data (1982) at 6 a.m. Greenwich Mean Time (GMT). The summer season consists of June 1-October 30, and the winter season is November 1-May 31. Each subsequent trajectory was started every 2 days at 6 a.m. GMT. The spatial resolution of the trajectory simulations was well within the spatial resolution of the input data, and the interval of time between releases was sufficiently short to sample weather-scale changes in the input winds (Price et al., 2004).

C.2. Oil-Spill-Trajectory Model Assumptions:

- Oil spills occur in the hypothetical launch areas or along hypothetical pipeline segments.
- Companies transport the produced oil through pipelines.
- An oil spill reaches the water.
- An oil spill encapsulated in the landfast ice does not move until the ice moves or it melts out.
- Oil spills occur and move without consideration of weathering. The oil spills are simulated each as a point with no mass or volume. The weathering of the oil is estimated in the stand-alone SINTEF OWM model.
- Oil spills occur and move without any cleanup. The model does not simulate cleanup scenarios. The oil-spill trajectories move as though no booms, skimmers, or any other response action is taken.

- Oil spills stop when they contact the mainland coastline, but not the offshore barrier islands in Stefansson Sound.

Uncertainties exist, such as:

- the actual size of the oil spill or spills, should they occur;
- whether the spill reaches the water;
- whether the spill is instantaneous or a long-term leak;
- the wind, current, and ice conditions at the time of a possible oil spill;
- how effective cleanup is;
- the characteristics of crude oil at the time of the spill;
- how Alpine Composite crude oil will spread; and
- whether or not production occurs.

C.3. Oil-Spill-Trajectory Simulation. The trajectory-simulation portion of the model consists of many hypothetical oil-spill trajectories that collectively represent the mean surface transport and the variability of the surface transport as a function of time and space. The trajectories represent the Lagrangian motion that a particle on the surface might take under given wind, ice, and ocean-current conditions. Multiple trajectories are simulated to give a statistical representation, over time and space, of possible transport under the range of wind, ice, and ocean-current conditions that exist in the area.

Trajectories are constructed from simulations of wind-driven and density-induced ocean flow fields and the ice-motion field. The basic approach is to simulate these time- and spatially dependent currents separately, then combine them through linear superposition to produce an oil-transport vector. This vector is then used to create a trajectory. Simulations are performed for three seasons: winter (November-May), summer (June-October), and annual (January-December). The choice of this seasonal division was based on meteorological, climatological, and biological cycles and consultation with Alaska OCS Region analysts.

For cases where the ice concentration is below 80%, each trajectory is constructed using vector addition of the ocean current field and 3.5% of the instantaneous wind field—a method based on work done by Huang and Monastero (1982), Smith et al. (1982), and Stolzenbach et al. (1977). For cases where the ice concentration is 80% or greater, the model ice velocity is used to transport the oil. Equations 1 and 2 show the components of motion that are simulated and used to describe the oil transport for each spillete:

1 $U_{oil} = U_{current} + 0.035\ U_{wind}$
or
2 $U_{oil} = U_{ice}$
where:
U_{oil} = oil drift vector
$U_{current}$ = current vector (when ice concentration is <80%)
U_{wind} = wind speed at 10 m above the sea surface
U_{ice} = ice vector (when ice concentration is ≥80%)

The wind-drift factor was estimated to be 0.035, with a variable drift angle ranging from 0º-25ºclockwise. The drift angle was computed as a function of wind speed according to the formula in Samuels, Huang, and Amstutz (1982). (The drift angle is inversely related to wind speed.)

The trajectories age while they are in the water and/or on the ice. For each day that the hypothetical spill is in the water, the spill ages—up to a total of 360 days. While the spill is in the ice (≥80% concentration), the aging process is suspended. The maximum time allowed for the transport of oil in the ice is 360 days, after which the trajectory is terminated. After coming out of the ice, into open water, the trajectory ages to a maximum of 30 days.

C.4. Results of the Oil-Spill-Trajectory Model.

C.4.a. Conditional Probabilities: Definition and Application. The chance that an oil spill will contact a specific ERA or land or boundary segment within a given time of travel from a certain location or spill site is termed a conditional probability. The condition is that we assume a spill occurs. Conditional probabilities assume a spill has occurred and the transport of the spilled oil depends only on the winds, ice, and ocean currents in the study area.

For the Chukchi Sea Sale 193, we estimate conditional probabilities of contact within 3, 10, 30, 60, 180, or 360 days during summer. Summer spills are spills that begin in June through October. Therefore, if any contact to an ERA or land segment is made by a trajectory that began before the end of October, it is considered a *summer contact* and is counted along with the rest of the contacts from spills launched in summer. We also estimate the conditional probability of contact from spills that start in winter, freeze into the landfast ice, and melt out in spring. We estimate contacts from these spills for 3, 10, 30, 60, 180, or 360 days. Winter spills are spills that begin in November through May, melt out of the ice, and contact during the open-water period. Therefore, if any contact to an ERA or land segment is made by a trajectory that began by the end of May, it is considered a *winter contact* and is counted along with the rest of the contacts from spills launched in the winter.

C.4.a(1) Conditional Probabilities: Results. The chance of a spill contacting, assuming a spill has occurred, is taken from the conditional oil-spill-trajectory model results summarized generally below and listed in Tables A.2-1 through A.2-72. For specific analysis of conditional probabilities in regard to specific resources please see Section IV.C.

C.4.a(1)(a) Comparisons between Spill Location and Season. The primary differences of contact between hypothetical launch areas and pipeline segments are geographic in the perspective of west to east and nearshore versus offshore. Offshore spill locations take longer to contact the coast and nearshore ERA's, if contact occurs at all. Winter spill contact to nearshore and coastal resources is less often and, to a lesser extent, due to the landfast ice in place from December to April. Hypothetical spills have a stochastic northerly or southwesterly direction of spread.

The western edge of the proposed lease area is adjacent to Russian territory. Table A.1-91 shows the range of annual conditional probabilities that an oil spill starting at particular location will contact Russian waters within 3, 10, 30, 60 180 or 360 days. The chance of contact is estimated to gridded boxes within the study area boundary on the Russian side of the boundary. The chance of an oil spill contacting Russian territory is 2% or less within 180 days for a spill starting in the northeast portion of the proposed lease area (LA7, LA8, and LA13; Map A.1-4A). The chance of a spill contacting Russian territory is slightly greater for launch areas in central parts of the proposed lease area (LA2, LA3, LA5, LA6, and LA11). For those launch areas, the chance of a spill contacting Russian territory is 5% or less within 60 days. The chance of a spill contacting Russian territory is higher for the western edge of the proposed lease area (LA 1, LA 4, and LA9). For those launch areas, the chance of a spill contacting Russian territory is about 9% or less within 10 days.

C.4.a(1)(b) Generalities Through Time.

3 Days: In general, contact to individual land segments (LS's) and ERA Land is due to hypothetical spills from the nearshore pipeline segments where assumed hypothetical pipelines could come ashore. There is a <0.5% chance of a large spill contacting the ERA Land or individual land segments from launch areas or pipeline segments that begin approximately 30-150 mi offshore from the coast. Launch areas or pipeline segments adjacent to or on top of ERA's have the highest percent chance of contact within 3 days.

During the entire year (annual), pipeline segments P1, P6, P9 or P11 have a <0.5-3 % chance of contacting individual LS's 64 (Point Hope), 65 (Cape Lisburne), 72-74 (Point Lay-Kasegaluk Lagoon), 79 (Wainwright), or 82 (Skull Cliff) (Table A.2-7). All other launch areas and pipeline segments have a <0.5% chance of contacting individual land segments within 3 days over the entire year. The chance of contact to ERA Land ranges from 1-6% for P1, P6, P9, or P11 (Table A.2-1). All other launch areas and pipeline segments have a <0.5% chance of contact to Land (Table A.2-1). During the summer, pipeline segments P1, P6, P9, or P11 have a <0.5-5% chance of contacting individual LS's 64 (Point Hope), 65 (Cape Lisburne), 72-74 (Point Lay-Kasegaluk Lagoon), 79 (Wainwright), or 80-83 (Eluksingiak Point-Nulavik) (Table A.2-31). All other launch areas (both nearshore and offshore) and pipeline segments have a <0.5% chance of contacting individual land segments within 3 days over summer. During the winter, pipeline segments P1, P6, or P11 have a <0.5-3 % chance of contacting individual LS's 64 (Point Hope), 65 (Cape Lisburne), 72-74 (Point Lay-Kasegaluk Lagoon), or 82 (Skull Cliff) (Table A.2-56). All other launch areas (both nearshore and offshore) and pipeline segments have a <0.5% chance of contacting individual LS's within 3 days over winter (Table A.2-56).

Launch areas or pipeline segments adjacent to or on top of ERA's have the highest percent chance of contact. During the entire year, launch areas LA1-LA13 have a <0.5-28% chance of contacting individual ERA's (Table A.2-1). Pipeline segments P1-P11 have a <0.5-39% chance of contacting individual ERA's (Table A.2-1). During summer, launch areas LA1-LA13 have a <0.5-56% chance of contacting individual ERA's (Table A.2-25). During summer, pipeline segments P1-P11 have a <0.5-57% chance of contacting individual ERA's (Table A.2-25). During winter, launch areas LA1-LA13 have a <0.5-27% chance of contacting individual ERA's (Table A.2-49). During winter, pipeline segments P1-P11 have a <0.5-40% chance of contacting individual ERA's (Table A.2-49).

10 Days: During the entire year (annual), pipeline segments P1, P3, P6, P9 or P11 have a <0.5-6 % chance of contacting individual LS's 64-66 (Point Hope-Ayugatak Lagoon), 71-75 (Sitkok Point-Icy Cape), or 78-85 (Point Collie to Barrow) (Table A.2-8). Nearshore launch areas LA9-LA13 have a <0.5-2% chance of contacting LS's 64-65 (Point Hope-Cape Lisburne), 71-75(Sitkok Point-Icy Cape), 79-80 (Wainwright-Kugrua Bay) or 84-85 (Barrow area) (Table A.2-8). All other launch areas and pipeline segments have a <0.5% chance of contacting individual land segments within 10 days over the entire year. The chance of contact to ERA Land ranges from 7-17% for P1, P3, P6, P9, or P11 (Table A.2-2) and 1-4% for LA9-LA13. All other launch areas and pipeline segments have a <0.5% chance of contact to ERA Land (Table A.2-2). During summer, pipeline segments P1, P3, P6, P9, or P11 have a <0.5-8% chance of contacting individual land segments (Point Hope-Ayugatak Lagoon), 65 (Cape Lisburne), 71-76 (Sitkok Point-Avak Inlet), or 78-85 (Nivat Point-Barrow) (Table A.2-32). Nearshore launch areas LA9-LA13 and offshore LA8 have a <0.5-4% chance of contacting LS's 64-65 (Point Hope - Cape Lisburne), 71-75(Sitkok Point-Icy Cape), 79-80 (Wainwright-Kugrua Bay) or 83-85 (Nulavik) (Table A.2-32). All other launch areas (both nearshore and offshore) and pipeline segments have a <0.5% chance of contacting individual land segments within 10 days over summer. During winter, pipeline segments P1, P6, P9, or P11 have a <0.5-6% chance of contacting individual LS's 64-65 (Point Hope-Cape Lisburne), 72-75 (Point Lay-Icy Cape),79-80 (Wainwright-Kugrua Bay) and 82-85 (Skull Cliff-Barrow) (Table A.2-56). Nearshore launch areas LA10, LA11 or LA13 have a <0.5-1% chance of contacting 72-75(Point Lay-Icy Cape) or 84-85(Barrow Area) (Table A.2-56). All other launch areas (both nearshore and offshore) and pipeline segments have a <0.5% chance of contacting individual land segments within 10 days over winter (Table A.2-56).

Launch areas or pipeline segments adjacent to or on top of ERA's have the highest percent chance of contact. During the entire year, launch areas LA1 through LA13 have a <0.5-40% chance of contacting individual ERA's (Table A.2-2). Pipeline segments P1 through P11 have a <0.5-47% chance of contacting individual ERA's (Table A.2-2). During summer, launch areas LA1 through LA13 have a <0.5-63% chance of contacting individual ERA's (Table A.2-26). During summer, pipeline segments P1 through P11 have a <0.5-67% chance of contacting individual ERA's (Table A.2-26). During winter, launch areas LA1 through LA13 have a <0.5-37% chance of contacting individual ERA's (Table A.2-50). During winter, pipeline segments P1 through P11 have a <0.5-51% chance of contacting individual ERA's (Table A.2-50).

30 Days: Within 30 days, large spills from the southern and western portion of the planning area (P1, LA4 or LA9) have a small chance (<0.5-1%) of contacting Russian Chukchi coastline individual land segments. The percent chance of contacting the grouped land segments Russia Chukchi Coastline (ERA 95) ranges from 1-5% from LA1, LA4, LA9, P1, P2, or P3. If large oil spills contact the U.S shoreline along the Chukchi coast, most of the contact occurs within 30 days.

During the entire year (annual), P1, LA4 or LA9 have a <0.5-1 % chance of contacting LS's 27or 34-39 (Rigol, Tepeken-Uelen, Russia) (Table A.2-9). P1, P3, P5, P6, P9, LA5, LA9, LA10 or LA 11 have a <0.5%-8% chance of contacting individual LS's 64-66 (Point Hope-Ayugatak Lagoon),or 71-77 (Sitkok Point-Noketlek Point) (Table A.2-9). LA7, LA8, LA11-LA13, or P8-P11have a <0.5-5% chance of contacting individual LS's 78-86 (Point Collie-Plover Islands) (Table A.2-9). All other launch areas (both nearshore and offshore) and pipeline segments have a <0.5% chance of contacting individual LS's within 30 days over the entire year (Table A.2-9).

During summer, P1, P3, LA4 or LA9 have a <0.5-2 % chance of contacting LS's 27or 34-39 (Rigol, Enumino, Mys Serdtse-Kamen, Uelen, Russia) and a <0.5-9% chance of contacting LS's 63-66 (Cape Seppings-Ayugatak Lagoon) (Table A.2-23). P1, P3, P5, P6, P8-P11, LA4, LA5, or LA7-LA13 have a <0.5%-13% chance of contacting at least one individual LS's 63-86 (Cape Seppings-Plover Islands) (Table A.2-9). All other launch areas (both nearshore and offshore) and pipeline segments have a <0.5% chance of contacting individual land segments within 30 days over summer (Table A.2-23).

During winter, P1, P2, LA4 or LA9 have a <0.5-1 % chance of contacting LS's 27, 35, 36 or 39 (Rigol, Tepeken-Uelen, Russia) and a <0.5-2% chance of contacting LS's 63-66 (Cape Seppings-Ayugatak Lagoon) (Table A.2-57). P1, P3, P5, P6, P8-P11, LA4, LA5, or LA7-LA13 have a <0.5%-7% chance of contacting LS's 64-65 (Point Hope-Cape Lisburne), 74-75 (Kuchaurak-Icy Cape), or 78-85 (Point Collie-Barrow) (Table A.2-57). All other launch areas (both nearshore and offshore) and pipeline segments have a <0.5% chance of contacting individual land segments within 30 days over winter (Table A.2-57).
Launch areas or pipeline segments adjacent to or on top of ERA's have the highest percent chance of contact. During the entire year, launch areas LA1-LA13 have a <0.5-51% chance of contacting individual ERA's (Table A.2-3). Pipeline segments P1-P11 have a <0.5-58% chance of contacting individual ERA's (Table A.2-3). During summer, launch areas LA1-LA13 have a <0.5-69% chance of contacting individual ERA's (Table A.2-27). During summer, pipeline segments P1-P11 have a <0.5-71% chance of contacting individual ERA's (Table A.2-27). During winter, launch areas LA1-LA13 have a <0.5-59% chance of contacting individual ERA's (Table A.2-51). During winter, pipeline segments P1-P11 have a <0.5-63% chance of contacting individual ERA's (Table A.2-51).

D. Oil-Spill-Risk-Analysis.

A measure of oil-spill impact is determined by looking at the chance of one or more spills occurring and then contacting a resource of concern. This analysis helps determine the relative spill occurrence and contact associated with oil and gas production in different regions of the proposed sale area. Combined probabilities are estimated using the conditional probabilities, the historical oil-spill rates, the resource estimates, and the assumed transportation scenarios. These are combined through matrix multiplication to estimate the mean number of one or more spills occurring and contacting.

D.1. Chance of One or More Spills Occurring. The chance of one or more large spills occurring is derived from two components: (1) the spill rate and (2) the resource volume estimates. The spill rate is multiplied by the resource volume to estimate the mean number of spills. Oil spills are treated statistically as a Poisson process, meaning that they occur independently of one another. If we constructed a histogram of the chance of exactly 0 spills occurring during some period, the chance of exactly 1 spill, 2 spills, and so on, the histogram would have a shape known as a Poisson distribution. An important and interesting feature of this distribution is that it is entirely described by a single parameter, the mean number of spills. Given its value, you can calculate the entire histogram and estimate the chance of one or more large spills occurring. The oil-resource volume estimate is 1 Bbbl for Alternative I, the Proposed Action.

D.1.a. Spill Rates. We derive the spill rates from a modeling study done by the Bercha Group, Inc. (2006a). This study examined alternative oil-spill-occurrence estimators for the Chukchi Sea using a fault-tree method. Using fault trees, oil-spill data from the Gulf of Mexico were modified and incremented to represent expected Arctic performance and included both Arctic and non-Arctic variability.

Fault-tree analysis is a method for estimating the spill rate resulting from the interactions of other events. Fault trees are logical structures that describe the causal relationship between the basic system components and events resulting in system failure. Fault-tree models are a graphical technique that provides a systematic description of the combinations of possible occurrences in a system, which can result in an undesirable outcome. Figure A-5 shows the generalized parts of a fault tree starting with the top event. The top event is defined as the failure under investigation. In this case, it is either a large pipeline or platform spill. A series of events that lead to the top event are described and connected by logic gates. Logic gates define the mathematical operations conducted between events.

Figure A-6 shows a typical fault tree for large pipeline spills. The most serious undesirable outcome, such as a large pipeline spill, was selected as the top event. A fault tree was constructed by relating the sequences of events that, individually or in combination, could lead to the leak or spill. The tree was constructed by deducing, in turn, the preconditions for the top event and then successively for the next levels of events, until the basic causes were identified. In Figure A-6, these events included corrosion, third-party impact, operation impact, mechanical failure, and natural hazards—unknown and Arctic. These sub-resultant events were further elucidated to determine their base cause. For example, corrosion could be internal or external corrosion; third-party impact could be due to fishing, trawling, jackup, or anchor impact. Figure A-7 shows a typical fault tree for a large platform spill. The most serious undesirable outcome, such as a large platform spill, was selected as the top event. Events include a process facility release, a storage tank release, structural failure, hurricane or storm, collision, and Arctic. The sub-resultant events, that make up the Arctic, included ice force, low temperature, and others.

Probabilities were assigned to each event so that the probability of the top event was estimated. This required knowledge of the probable failure rates for each event. At an OR gate in a fault tree, the probabilities were added to give the probability of the next event. The fault trees in the Bercha Group, Inc. (2006a) report were composed entirely of OR gates. The computation of resultant events consisted of the addition of the probabilities of events at each level of the fault tree to obtain the resultant probability at the next higher value.

In the Bercha Group Inc. (2006a) study, fault trees were used to transform historical spill statistics for non-Arctic regions to predictive spill-occurrence estimates for the Beaufort Sea program area. The Bercha Group, Inc. (2006a) fault-tree analysis focused on Arctic effects as well as the variance in non-Arctic effects such as spill size and spill frequency. Arctic effects were treated as a modification of existing spill causes as well as unique spill causes. Modification of existing spill causes included those that also occur in other OCS regions but at a different frequency, such as trawling accidents. Unique spill causes included events that occur only in the Arctic, such as ice gouging, strudel scour, upheaval buckling, thaw settlement, and other for pipelines. For platforms, unique spill causes included ice force, low temperature, and other.

The treatment of uncertainties in the probabilities assigned to each event was estimated as discussed in the following.

Treatment of Uncertainties: The measures of uncertainty calculated were expanded beyond Arctic effects in each fault-tree event to include the non-Arctic variability in spill size, spill frequency, and facility parameters including wells drilled, number of platforms and subsea wells and subsea pipeline length. The inclusion of these types of variability—Arctic effects, non-Arctic data and facility parameters—is intended to provide a realistic estimate of spill-occurrence indicators and their resultant variability.

The treatment of uncertainties was examined through numerical simulation. To assess the impact of uncertainties in the Arctic effects incorporated fault trees, ranges around the expected value were estimated for all the Arctic effects, both modified and unique for Arctic effects. The numerical distributions generated through these perturbations in the expected values were modeled as triangular distributions and input to the numerical simulation analysis conducted as part of the result generation (Bercha Group, Inc. 2006a).

In order to model the variability of the base data and its distribution through the Arctic effects, using the Monte Carlo approach, an appropriate distribution needs to be derived. As in the previous study Bercha Group, Inc.(2006b), a triangular distribution was selected. The triangular distribution typically is used as a descriptor of a population for which there is only limited sample data, as is the current case. The distribution is based on knowledge of a minimum and maximum, which was derived from the historical data here, and an educated guess as to what the modal value might be. Here, the modal value was chosen to be a function of the average historical value. Despite being a simplistic description of a population, the triangular distribution is a very useful one for modeling processes where the relationship between variables is understood, but data are scarce.

Also, when combining several variables in a functional relationship using numerical methods, as is done in Monte Carlo Simulation, the triangular distribution is a preferred one due to its simplicity and relatively accurate probabilistic resultant when evaluated by a large number of random draws, as occurs in the Monte Carlo process. The data used here typifies sparse data with a preferred or modal value and an easily identifiable maximum and minimum. Then, for the case of the simple upper and lower 100% confidence interval (called High and Low), the expected value E (or mean value) of the triangular distribution can be expressed as:

E = (High + Mode + Low) / 3

For maximum and minimum that are not at the 100% confidence interval level, such as those at 90% confidence levels, a Monte Carlo computation is used to evaluate the expected value of each distribution. Based on the historical data, the triangular distribution expected value computed from the low, mode, and high values at 90% confidence intervals are given in Tables A.1-18, A.1-19 and A.1-20 for pipelines, platforms, and wells respectively.

Numerical simulation methods are tools for evaluating the properties of complex, as well as nondeterministic processes. Problems can have an enormous number of dimensions or a process that involves a path with many possible branch points, each of which is governed by some fundamental probability of occurring.
A type of numerical simulation, called Monte Carlo simulation, was used to obtain the outcome of a set of interactions for equations in which the independent variables are described by distributions of any arbitrary form. The Monte Carlo simulation is a systematic method for selecting values from each of the independent variable distributions and computing all valid combinations of these values to obtain the distribution of the dependent variable. This was done using a computer, so that thousands of combinations can be rapidly computed and assembled to give the output distribution.

Consider the example of the following equation:

$X = X_1S + X_2$

Where, X is the dependent variable (such as spill persistence in days), S is the size of the spill in bbl, and X_1 and X_2 are correlation coefficients. Suppose now that X_1 and X_2 are some arbitrary distributions that can be described by a collection of values X_1 and X_2. What we do in the Monte Carlo process, figuratively, is to put the collection of the X_1 values into one hat, the X_1 hat, and the X_2 values into an X_2 hat. We then randomly draw one value from each of the hats and compute the resultant value of the dependent variable, X. This is done several thousand times. Thus, a resultant or dependent variable distribution, X, is estimated from the computations of all valid combinations of the independent variables (X_1 and X_2), for a given S.

Generally, the resultant can be viewed as a cumulative distribution function as illustrated in Figure A-8. Such a cumulative distribution function (CDF) also is a measure of the accuracy or, conversely, the variance of the distribution. As can be seen from this figure, if the distribution is a vertical line, no matter where one draws on the vertical axis, the same value of the variable will result, that is, the variable is a constant. At the other extreme, if the variable is completely random, the distribution will be represented as a diagonal straight line between the minimum and maximum value. Intermediate qualitative descriptions of the randomness of the variable follow from inspection of the CDF in Figure A-7. For example, if we are interested in confidence intervals, we simply take the value of the abscissa corresponding to the appropriate confidence interval, say 0.95 or 95%.

D.1.a(1) Fault-Tree Input Data and Their Uncertainty Variations. The Arctic effects include modifications to events associated with the historical data set from other OCS regions, hereafter called Arctic modified effects, and adding spill events unique to the arctic environment, hereafter called Arctic unique effects. Arctic modified effects are those changing the frequency component of certain contributions to events such as anchor impacts which could occur both in the Arctic and temperate zones. Arctic modified effects for pipelines apply to external corrosion, internal corrosion, anchor impact, jackup rig or spud barges, trawl/fishing net, rig anchoring, workboat anchoring, mechanical connection failure or material failure, and mudslide events. Table A.1-21 shows the input rationalization of the Arctic modified effects for pipelines. Arctic modified effects for platforms apply to process facility release, storage tank release, structural failure, hurricane/storm and collision events. Table A.1-23 shows the input rationalizations of the Arctic modified effects for platform events. The frequency increments in this table are given as the median values calculated using the Monte Carlo method with inputs as the low, expected, and high values.

Arctic unique effects are additive components that are unique to the Arctic environment. Quantification of existing events for the Arctic was done in a relatively cursory way restricted to engineering judgment.

For pipelines, Arctic unique effects included ice gouging, strudel scour, upheaval buckling, thaw settlement, and other. Table A.1-21 shows the input rationalization of the Arctic unique effects for pipelines. A reproducible but relatively elementary analysis of gouging and scour effects was carried out. The ice-gouge failure rate was calculated using an exponential failure distribution for a 2.5-m cover, 0.2-m average gouge depth, and 4-gouges-per-kilometer-year flux. Strudel scour was assumed to occur only in shallow water, with an average frequency of four scours per square mile and 100 ft of bridge length with a 10% conditional pipeline failure probability. Upheaval-buckling and thaw-settlement effect assessments were included on the basis of professional judgment; no engineering analysis was carried out for the assessment of frequencies to be expected for these effects. Upheaval buckling was assumed to have a failure frequency of 20% of that of strudel scour. Thaw settlement was assumed to have a failure frequency of 10% of that of strudel scour. Table A.1-22 shows the variance in the pipeline arctic effect inputs. The existing MMS databases on pipeline mileage were used as they stood with all their inherent inaccuracies. Arctic unique effects for platforms included ice force, low temperature and other. Table A.1-24 shows the variance in the platform Arctic unique effect inputs. No Arctic unique effects were estimated for the wells, which were considered to blow out with frequencies the same as those for the Gulf of Mexico. The above information summarizes the input data to the fault trees and their uncertainty variation. For further information the reader is directed to Bercha Group, Inc. (2006a).

D.1.a(2) Results for Spill Rates.

Type	Mean	Mean
Platforms	0.21 spills per billion barrels produced	6 spills per thousand years
Pipelines	0.30 spills per billion barrels produced	8 spills per thousand years
Total	0.51 spills per billion barrels produced	14 spills per thousand years

The annual rates were weighted by the annual production over the total production or the year over the total years, and the prorated rates were summed to determine the rates over the life of the project as shown above. Bercha Group, Inc. (2006a) calculated confidence intervals on the total spill rate per billion barrels at the 95% confidence interval (CI) are as follows:

Type	Mean	95% CI
Total	0.51	0.32-0.77

D.1.b. Resource-Volume Estimates. The resource volume estimates are discussed in Section IV.A.2.a.

D.1.c. Transportation Assumptions. Appendix A.1 Section C - Estimates of Where an Oil Spill May Go discusses the transportation assumptions for the launch areas and their associated pipelines.

D.1.d. Results for the Chance of One or More Spills Occurring. The chance of one or more spills occurring does not factor in the chance that a development project occurs. Given the many logistical, economic, and engineering factors, there is probably a <10% chance that a commercial field will be leased, discovered, and developed. However, because leasing and exploration could lead to a development project, the MMS must evaluate what would happen if a development occurred even though the chance of that happening is probably very small in a frontier area like the Chukchi Sea. Our oil-spill-risk analysis for a large spill occurring assumes there is a 100% chance that a project will be developed and 1 Bbbl of oil will be produced. Clearly, this overstates the oil-spill occurrence associated with leasing and exploration in the Chukchi Sea where it is unlikely a development will occur from those activities. If a development occurs, this oil-spill analysis more accurately represents the chance of a spill occurring.

The chance of one or more large spills occurring assumes there is a 100% chance that a project will be developed and 1 Bbbl of oil will be produced. The large spill rates used in this section are all based on spills per billion barrels. Using the above mean large spill rates, Table A.1-25 shows the estimated mean number of large oil spills for Alternative I, the Proposed Action and its alternatives. For Alternative I, the Proposed Action, we estimate 0.30

pipeline spills and 0.21 platform (and well) spills for a total over the life of Sale 193 production of 0.51 spills. Table A.1-27 shows the estimated total number of oil spills for the Proposed Action using spill rates at the 95% CI. For Alternative I, the Proposed Action, total spills over the life of the Sale 193 production range from 0.32-0.77 spills. For purposes of analysis, one large spill was assumed to occur and is analyzed in this EIS.

For Alternative III, Corridor I, we estimate 0.19 pipeline spills and 0.13 platform (and well) spills for a total over the life of Sale 193 production of 0.33 spills. Table A.1-27 shows the estimated total number of oil spills for the Proposed Action using spill rates at the 95% CI. For Alternative III, Corridor I, total spills over the life of the Sale 193 production range from 0.20-0.49 spills. For purposes of analysis, one large spill was assumed to occur and is analyzed in this EIS.

For Alternative IV, Corridor II, we estimate 0.25 pipeline spills and 0.18 platform (and well) spills for a total over the life of Sale 193 production of 0.43 spills. Table A.1-27 shows the estimated total number of oil spills for the Proposed Action using spill rates at the 95% CI. For Alternative IV, Corridor II, total spills over the life of the Sale 193 production range from 0.27-0.65 spills. For purposes of analysis, one large spill was assumed to occur and is analyzed in this EIS.

Using the above mean spill rates, Table A.1-26 shows the chance of one or more large pipeline spills occurring is 26% and the chance of one or more large platform (wells and platform) spills is 19% for Alternative I, the Proposed Action over the life of production. The total is the sum of the platform, wells and pipeline mean number of spills. The chance of one or more large spills total occurring is 40% for Alternative I, the Proposed Action. Figure A.1-9 shows the Poisson distribution. The chance of no spills occurring is 60% for Alternative I, the Proposed Action. Table A.1-27 shows the chance of one or more large spills total for Alternative I, the Proposed Action using spill rates at the 95% CI. For Alternative I, the Proposed Action, the percent chance of one or more large spills total ranges from 27-54% at the 95% confidence interval (Table A.1-27).

Table A.1-26 shows the chance of one or more large pipeline spills occurring is 17% and the chance of one or more large platform (wells and platform) spills is 12% for Alternative III, Corridor I over the life of production. The total is the sum of the platform, wells and pipeline mean number of spills. The chance of one or more large spills total occurring is 28% for Alternative III, Corridor I. Figure A.1-10 shows the poisson distribution. The chance of no spills occurring is 72% for Alternative III, the Corridor I. Table A.1-27 shows the chance of one or more large spills total for Alternative III, the Corridor I using spill rates at the 95% CI. For Alternative III, the Corridor I, the percent chance of one or more large spills total ranges from 18-39% at the 95% confidence interval (Table A.1-27).

Table A.1-26 shows the chance of one or more large pipeline spills occurring is 22% and the chance of one or more large platform (wells and platform) spills is 16% for Alternative IV, Corridor II over the life of production. The total is the sum of the platform, wells and pipeline mean number of spills. The chance of one or more large spills total occurring is 35% for Alternative IV, Corridor II. Figure A.1-11 shows the Poisson distribution. The chance of no spills occurring is 65% for Alternative IV, the Corridor II. Table A.1-27 shows the chance of one or more large spills total for Alternative IV, the Corridor II using spill rates at the 95% CI. For Alternative IV, the Corridor II, the percent chance of one or more large spills total ranges from 24-48% at the 95% CI (Table A.1-27).

D.2. Chance of a Spill Contacting. The chance of a spill contacting is taken from the oil-spill-trajectory model results summarized in Section C.4.b and listed in Tables A.2-1 through A.2-72.

D.3. Results of the Oil-Spill-Risk Analysis: Combined Probabilities. Tables A.2-73 through A.2-90 show the annual combined probabilities for the Proposed Action and its alternatives. The combined probabilities reflect the chance of one or more large spills occurring and contacting over the assumed production life of the lease area. For the most part, the chance of one or more large spills occurring and contacting ERAs and land segments is 7% or less over 30 days or 14% or less over 360 days for Alternative I. For ERA's, with a chance of occurrence and contact ≥0.5%, the chance of one or more large spills occurring and contacting a certain ERA ranges from 1-4%, 1-5% and 1-7% within 3,10 and 30 days respectively for Alternative I. The chance of one or more large spills occurring and contacting a certain ERA ranges from 1-2%, 1-3% and 1-3% within 3, 10, and 30 days respectively for Alternative III. The chance of one or more large spills occurring and contacting a certain ERA ranges from 1-3%, 1-4% and 1-5% within 3, 10, and 30 days, respectively, for Alternative IV. The chance of one or more large spills occurring and contacting individual land segments is 1% or less within 30 days. For Alternative I, land segments with a 1% chance of one or more spills occurring and contacting after 30 days include LS's 72 (Point Lay), 73 (Tungaich Point), 74 (Kasegaluk Lagoon), and 75 (Icy Cape). For Alternative III, land segments with a 1% chance of one or more spills occurring and contacting after 30 days include LS's 73 (Tungaich Point). For Alternative IV, land segments with a 1% chance of one or more spills occurring and contacting after 30 days include LS's 72 (Point Lay), 73 (Tungaich Point), and 74 (Kasegaluk Lagoon).

E. Small Oil Spills.

Small spills are spills that are <1,000 bbl. We analyze the effects of small spills in Section IV.C. We consider two types of small spills: crude oil and refined oil.

We use the Alaska North Slope record of small spills. We expect the same companies and regulators to participate offshore in the Chukchi Sea as those that are now operating on the onshore Alaska North Slope. We expect similar but not exact environmental conditions. We believe it is reasonable to assume that the rate in the Beaufort Sea will be similar to the rate on the Alaska North Slope. The OCS rate of crude and refined small spills is approximately 3,460 spills per billion barrels, and the North Slope rate is approximately 618 spills per billion barrels. For whatever reason, the spill rate on the Alaska North Slope is significantly less than the OCS rate.

The analysis of operational small oil spills uses historical oil-spill databases and simple statistical methods to derive general information about small crude and refined oil spills that occur on the Alaska North Slope. This information includes estimates of how often a spill occurs for every billion barrels of oil produced (oil-spill rates), the mean (average) number of oil spills, and the mean and median size of oil spills from facilities, pipelines, and flowlines combined. We then use this information to estimate the number, size, and distribution of operational small spills that may occur from Chukchi Sea Sale 193. The analysis of operational small oil spills considers the entire production life of the Chukchi Sea sale and assumes the following:

- commercial quantities of hydrocarbons are present in the multiple-sale Program Area, and
- these hydrocarbons will be developed and produced at the estimated resource levels.

Uncertainties exist, such as

- the estimates required for the assumed resource levels, or
- the actual size of a crude- or refined-oil spill.

We use the history of crude and refined oil spills reported to the State of Alaska, Department of Environmental Conservation (ADEC) and the Joint Pipeline Office to determine crude and refined oil-spill rates and patterns from Alaska North Slope oil and gas exploration and development activities for spills ≥1gallon and <1,000 bbl. Refined oil includes aviation fuel, diesel fuel, engine lube, fuel oil, gasoline, grease, hydraulic oil, transformer oil, and transmission oil. The Alaska North Slope oil-spill analysis includes onshore oil and gas exploration and development spills from the Point Thompson Unit, Badami Unit, Kuparuk River Unit, Milne Point Unit, Prudhoe Bay West Operating Area, Prudhoe Bay East Operating Area, and Duck Island Unit.

The Alaska North Slope oil-spill database of all spills ≥1 gallon is from ADEC. Oil-spill information is provided to ADEC by private industry according to the State of Alaska Regulations 18 AAC 75. The totals are based on initial spill reports and may not contain updated information. The ADEC database integrity is most reliable for the period 1989 and after due to increased scrutiny after the *Exxon Valdez* oil spill (Volt, 1997, pers. commun.). For this analysis, the database integrity cannot be validated thoroughly. However, we use this information, because it is the only information available to us about small spills. For this analysis, the ADEC database is spot-checked against spill records from ARCO Alaska, Inc. and British Petroleum, Inc. All spills ≥1 gallon are included in the dataset. We use the time period January 1989 through December 2000 in this analysis of small oil spills for the Chukchi Sea multiple-sales.

A simple analysis of operational small oil-spills is performed. Alaska North Slope oil-spill rates are estimated without regard to differentiating operation processes. The ADEC database base structure does not facilitate quantitative analysis of Alaska North Slope oil-spill rates separately for platforms, pipelines, or flowlines.

E.1. Results for Small Operational Crude Oil Spills. The analysis of Alaska North Slope crude oil spills is performed collectively for all facilities, pipelines, and flowlines. The pattern of crude oil spills on the Alaska North Slope is one of numerous small spills. Of the crude oil spills that occurred between 1989 and 2000, 31% were ≤2 gallons (gal); 55% were ≤5 gal. Ninety-eight percent of the crude oil spills were <1,050 gal (25 bbl), and 99% were <2,520 gal (60 bbl). The spill sizes in the database range from <1 gal-38,850 gal (925 bbl). The average crude oil-spill size on the Alaska North Slope is 113.4 gal (2.7 bbl), and the median spill size is 5 gal. For purposes of analysis, this EIS assumes an average crude oil-spill size of 126 gal (3 bbl).

Table A.1-28 shows the estimated crude oil-spill rate for the Alaska North Slope is 178 spills per billion barrels produced. Table A.1-29 shows the assumed number, size, and total volume of small spills for the Proposed Action and alternatives. Table A.1-30 shows the assumed size distribution of those spills for the Proposed Action and alternatives.

The causes of Alaska North Slope crude oil spills, in decreasing order of occurrence by frequency, are leaks, faulty valve/gauges, vent discharges, faulty connections, ruptured lines, seal failures, human error, and explosions. The cause of approximately 30% of the spills is unknown.

E.2. Results for Small Operational Refined Oil Spills. The typical refined products spilled are aviation fuel, diesel fuel, engine lube, fuel oil, gasoline, grease, hydraulic oil, transformer oil, and transmission oil. Diesel spills are 58% of refined oil spills by frequency and 83% by volume. Engine lube oil spills are 10% by frequency and 3% by volume. Hydraulic oil is 26% by frequency and 10% by volume. All other categories are <1% by frequency and volume. Refined oil spills occur in conjunction with oil exploration and production. The refined oil spills correlate to the volume of Alaska North Slope crude oil produced. As production of crude oil has declined, so has the number of refined oil spills. Table A.1-31 shows that from January 1989-December 2000, the spill rate for refined oil is 440 spills per billion barrels produced. Table A.1-32 shows the assumed refined oil spills during the lifetime of the Proposed Action and its alternatives.

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Table A.1-1
Large and Small Spill Sizes, Source of Spill, Type of Oil, Number and Size of Spill and Receiving Environment We Assume for Analysis in this EIS by Section

EIS Section	Source of Spill	Type of Oil	Number and Size of Spill(s) (Barrels)	Receiving Environment
Large Spills (≥1,000 barrels)				
IV.C	**Offshore** Pipeline Platform/Storage Tank	Crude Or Diesel	1 spill 4,600 Or 1,500 barrels	Open Water Under Ice On Top of Sea Ice Broken Ice Coastal Shoreline
Small Spills[1] (< 1,000 barrels)				
IV.C	**Offshore and/or Onshore** Operational Spills from All Sources	Diesel or Crude	133 spills <1 barrel 43 spills ≥1 barrel but <25 barrels 2 spills ≥ 25 and <500 barrels 1 spill ≥500 and <1,000 barrels	Open Water On Top of Sea Ice Broken Sea Ice Snow/Ice Tundra Coastal Shoreline
	Onshore and/or Offshore Operational Spills from All Sources	Refined	440 spills of 0.7 barrels each	

Note:

[1] These numbers are for Alternative I, the Proposed Action. Tables A.1-29 through A.1-32 in Appendix A.1 show the distribution of small crude and refined spills by Alternative.

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-2
Number of Blowouts per Year in the Gulf of Mexico and Pacific OCS Regions

		Total with Condensate/ Oil	Amount of Condensate/Oil (Barrels)			Production				Drilling				Workover/ Completion	Wells Drilled
Year	Number of Blowouts		Developme nt	Exploration	Total Exploration and Developme nt	Total	Fire	Hurricane	Other	Total	Exploration	Developme	Unknown	Total	Total
1956	1	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1957	1	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1958	2	1	Minimal	—	1	1	1	—	—	—	—	—	—	—	—
1959	1	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1960	2	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1961	0	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1962	1	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1963	1	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1964	7	3	10,380	—	10,380	3	1	2	—	—	—	—	—	—	—
1965	5	2	1688	—	1,688	1		1	—	1	—	—	1	—	—
1966	2	2	Minimal	—	1	—	—	—	—	1	—	—	1	—	—
1967	1	1	Minimal	—	1	1	—	—	1	—	—	—	—	—	—
1968	9	0	—	—	0	—	—	—	—	—	—	—	—	—	—
1969	3	3	82500	—	82500	2	—	—	2	1	—	1	—	—	—
1970	23	3	83000	—	83000	2	2	—	—	1	—	1	—	—	—
1971	9	1	450	—	450	1	1	—	—	—	—	—	—	—	851
1972	5	1	Minimal	—	1	—	—	—	—	1	—	—	1	—	845
1973	3	1	Minimal	—	1	—	—	—	—	1	—	1	—	—	820
1974	6	2	275	—	275	2	—	2	—	—	—	—	—	—	802
1975	7	1	Minimal	—	1	—	—	—	—	—	—	—	—	1	842
1976	6	0	—	—	0	—	—	—	—	—	—	—	—	—	1078
1977	10	0	—	—	0	—	—	—	—	—	—	—	—	—	1240
1978	12	1	Minimal	—	1	—	—	—	—	—	—	—	—	1	1164
1979	5	2	Minimal	—	1	—	—	—	—	2	—	2	—	—	1140
1980	8	2	1	—	1	1	—	—	1	1	—	1	—	—	1158
1981	10	4	64	—	64	—	—	—	—	2	—	2	—	2	1208
1982	9	2	Minimal	—	1	—	—	—	—	1	—	1	—	1	1255
1983	12	0	—	—	0	—	—	—	—	—	—	—	—	—	1180
1984	5	0	—	—	0	—	—	—	—	—	—	—	—	—	1352
1985	6	1	40	—	40	1	—	—	1	—	—	—	—	—	1169
1986	2	0	—	—	0	—	—	—	—	—	—	—	—	—	694
1987	13	1	60	—	60	—	—	—	—	1	—	1	—	—	845
1988	3	0	—	—	0	—	—	—	—	—	—	—	—	—	950
1989	12	0	—	—	0	—	—	—	—	—	—	—	—	—	947
1990	7	3	20.5	—	20.5	1	—	—	1	—	—	—	—	2	1018
1991	6	1	—	0.8	0.8	—	—	—	—	1	1	—	—	—	726
1992	1	1	—	100	100	—	—	—	—	1	1	—	—	—	431
1993	2	0	—	—	0	—	—	—	—	—	—	—	—	—	879
1994	0	0	—	—	0	—	—	—	—	—	—	—	—	—	845
1995	1	0	—	—	0	—	—	—	—	—	—	—	—	—	798
1996	4	0	—	—	0	—	—	—	—	—	—	—	—	—	889
1997	5	0	—	—	0	—	—	—	—	—	—	—	—	—	954
1998	7	1	1.5	—	1.5	1	—	—	1	—	—	—	—	—	993
1999	5	0	—	—	0	—	—	—	—	—	—	—	—	—	962
2000	9	3	—	200	200	—	—	—	—	2	2	—	—	1	1315
2001	10	1	1	—	1	—	—	—	—	—	—	—	—	1	1261
2002	6	1	350	—	350	1	—	1	—	—	—	—	—	—	929
2003	5	1	10	—	10	—	—	—	—	—	—	—	—	1	886
2004	4	2	5.4	11	16.4	1	—	—	1	—	—	—	—	1	894
2005	4	0	—	—	—	—	—	—	—	—	—	—	—	—	659
Total	278	43	178,480	311.8		17	—	—	—	17	—	—	—	9	33979

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-3
Gulf of Mexico Blowout Frequencies Recommended for Analyses

Phase		U.S. Gulf of Mexico OCS Experienced and Recommended Frequency	Units
Exploration Drilling	Shallow Gas	0.00382	Blowouts per well drilled
	Deep	0.00210	Blowouts per well drilled
	Total	0.00593	Blowouts per well drilled
Development Drilling	Shallow Gas	0.00257	Blowouts per well drilled
	Deep	0.00142	Blowouts per well drilled
	Total	0.00399	Blowouts per well drilled
Workover	–	0.00136	Blowouts per well workover[1]
	–	0.00017	Blowouts per well-year
Production	–	0.00005	Blowouts per well-year
Wireline	–	0.000007	Blowouts per wireline run [2]
	–	0.000017	Blowouts per wireline job [2]
	–	0.000028	Blowouts per well-year
Completion	–	0.00021[3]	Blowouts per well completion

Notes:
[1] One workover every 8 well-years.
[2] 4.2 wireline runs per well-year, 1.7 wireline jobs per well-year.
[3] Based on trend analyses.

Source:
Holland (1997).

Table A.1-4
Exploration Spills on the Arctic OCS

Lease No.	Sale Area	Operator	Date	Time 24 Hr	Facility	Substance	Amt. (Gal)	Cause of Spill	Response Action	Amount Recovered
0344	71	Sohio	7/22/1981	11:00	Mukluk Island	Diesel	0.50	Leaking line on portable fuel trailer	Sorbents used to remove spill. Contaminated gravel removed.	0.05
0344	71	Sohio	7/22/1981	14:00	Mukluk Island	Diesel	1.00	Overfilled fuel tank on equipment	Sorbents used to remove spill. Contaminated gravel removed.	1.00
0280	71	Exxon	8/7/1981		Beaufort Sea I	Hydraulic Fluid	1.00	Broken hydraulic line on ditch witch.	Fluid picked up with shovels.	1.00
0280	71	Exxon	8/8/1981		Beaufort Sea I	Trans. Fluid	0.25	Overfilling of transmission fluid.	Fluid picked up and placed in plastic bags.	0.25
0280	71	Exxon	1/11/1982		Beaufort Sea I	Hydraulic Fluid	0.50	Broken hydraulic line.	Fluid picked up and stored in plastic bags.	0.50
0280	71	Exxon	1/11/1982		Alaska Beaufort Sea I	Diesel	3.00	Overfilled catco 90-3 tank.	Fluid picked up.	3.00
0280	71	Exxon	1/17/1982		Beaufort Sea I	Diesel	1.00	Tank on catco 90-14 overfilled.	Fluid picked up and stored in plastic bags.	1.00
0280	71	Exxon	1/21/1982		Beaufort Sea I	Hydraulic Fluid	0.25	Broken hydraulic line on ditch witch.	Fluid picked up.	0.25
0371	71	Amoco	3/16/1982	N/A	Sandpiper Gravel Island	Unknown	1.00	Seeping from Gravel Island.	Sorbent pads.	Unknown
0849	87	Union Oil	9/4/1982	14:00	Canmar Explorer II	Unknown	1.00	Transfer of test tank from drillship to barge.	None	None
0871	87	Shell Western	9/5/1982	18:55	Canmar Explorer II	Light Oil	0.50	Washing down cement unit, drains not plumbed to oil/water seperator.	None	None
N/A	87	Shell	9/14/1982	19:00	Canmar II Drillship	Diesel	30.00	Tank vent overflowed during fuel transfer.	Deployed sorbent pads and pump.	30.00
0191	BF	Exxon	11/11/1982	10:00	Beechey Pt. Gravel Is.	Lube Oil	1.00	Loader tipped over lube oil drum	Oil cleaned up with sorbents. Contaminated gravel removed	1.00
0191	BF	Exxon	1/15/1983	10:00	Beechey Pt. Gravel Is.	Diesel	0.12	Fuel truck spilled diesel as it climbed a 40 degree ramp to island	Sorbents used and contaminated gravel removed	0.12
0191	BF	Exxon	1/23/1983	9:00	Beechey Pt. Gravel Is.	Hydraulic Fluid	2.50	Hydraulic line on backhoe broke	1 gallon in water. Boom deployed with sorbents, Contaminated gravel removed	2.50
0191	BF	Exxon	8/29/1983	6:30	Beechey Pt. Gravel Is.	Hydraulic Fluid	0.20	Hydraulic line on backhoe broke	Spill contained on island surface. Sorbents used and contaminated gravel removed.	0.25
0196	BF	Shell	8/30/1983		Ice Road to Tern Island	Hydraulic Fluid	10.0	Broken hydraulic line on rollogon	Unknown	Unknown
0191	BF	Exxon	2/26/1985	17:30	Beechey Pt. Gravel Is.	Hydraulic Fluid	0.37	Hydraulic line broke	Contaminated Snow Removed	0.37
0196	BF	Shell	3/1/1985	1:30	Ice Road to Tern Island	Hydraulic Fluid	3.00	Hydraulic line broke	Unknown	3.00
0191	BF	Exxon	3/2/1985		Beechey Pt. Gravel Is.	Gasoline	0.01	Operational Spill	Snow shoved into plastic bag.	0.01
0191	BF	Exxon	¾/1985		Beechey Pt. Gravel Is.	Waste Oil	2.00	Drum of waste oil punctured	Snow recovered	2.00
0196	BF	Shell	¾/1985	15:30	Tern Gravel Island	Crude Oil	1.00	Well Separator overflowed, crude oil escaped	Line boom deployed	Unknown

Table A.1-4 (Continued)
Exploration Spills on the Arctic OCS

Lease No.	Sale Area	Operator	Date	Time 24 Hr	Facility	Substance	Amt. (Gal)	Cause of Spill	Response Action	Amount Recovered
0196	BF	Shell	3/6/1985	16:30	Tern Gravel Island	Crude Oil	15.00	Test burner was operating poorly	Containment Boom deployed	Unknown
0196	BF	Shell	9/24/1985	16:00	Tern Gravel Island	Crude Oil	2.00	Oil released from steam heat coil when Halliburton tank moved	Sorbents and hand shovel used	2.00
0191	BF	Shell	10/4/1985	8:45	Enroute to Tern Gravel Island	Jet fuel B	800.00	Wire sling broke during helicopter transport of fuel blivits	Contaminated Snow Removed. Test holes drilled with no fuel below snow.	Unknown
0196	BF	Shell	10/29/1985	14:00	Tern Gravel Island	Crude Oil	2.00	Test oil burner malfunction	Contaminated snow removed	2.00
0196	BF	Shell	6/27/1986	13:30	Tern Gravel Island	Crude Oil	3.00	Test oil burner malfunction	Spray picked up with sorbents. Bladed up dirty snow.	2.00
1482	109	SWEPI	7/7/1989	3:00	Explorer III Drillship	Hydraulic fluid	10.0	Hydraulic line connector	Sorbent pads	0.84
1092	97	AMOCO	10/1/1991	2:00	CANMAR Explorer	Hydraulic fluid	2.00	Hydraulic line rupture	None	None
0865	87	ARCO	7/24/1993		Beaudril Kulluk	Diesel	0.06	Residual fuel in bilge water	None	None
0866	87	ARCO	9/8/1993	18:30	CANMAR Kulluk	Hydraulic fluid	1.26	Seal on shale shaker failed	None	None
0866	87	ARCO	9/24/1993		CANMAR Kulluk	Fuel	4.00	Fuel transfer in rough weather	3 gallons on deck of barge recovered, none in sea	3.00
1597	124	ARCO	10/31/1993		CANMAR Kulluk	Fuel	0.50	Released during emptying of disposal caisson	None	None
0943	87	Tenneco	1/24/1998	13:00	SSDC/MAT	Gear oil	220.0	Helicopter sling failure during transfer of drums to SSDC	Scooped up contaminated snow and ice	220.0
1585	124	BP Alaska	1/20/1997		Ice Road to Tern Island	Diesel, Hydraulic Fluid	10.5	Truck went through ice; fuel line ruptured	Scooped up contaminated snow and ice. Some product entered water	Unknown

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-5
Properties of Alpine Crude Oil (Composite)

Physical and Chemical Data for the Alpine Composite	
Chemical/Physical Property	
Specific Gravity (60°F/15.56°C)	0.834
Pour Point	-18
Reference Temperature 1 (°C)	10
Viscosity at Reference Temperature 1(cP)	103
Wax (weight %)	3.2
Asphaltenes (weight %)	0.06

Table A.1-6
The True Boiling Point Values used for the Alpine Composite Sample

Temperature [°C]	Evaporated [volume%]
85	8
105	13
135	19
175	27
205	33
235	38
265	45
310	54
350	62
420	72
525	89

Table A.1-7
Experimental Results from the Bench-Scale Laboratory Testing at 10°C (50°F) for the Alpine Composite Sample

Chemical/Physical Property	Fresh	150ºC+	200ºC+	250ºC+
Boiling Point [ºC]	-	167	246	296
Evaporation [vol%]	0	22	34	44
Residue [weight%]	100	81	69	60
Specific Gravity [g/L]	0.8340	0.8668	0.8845	0.8981
Pour Point [ºC]	-18	-3	9	18
Viscosity at Shear $10s^{-1}$ [cP]	103	118	839	1,160
Viscosity of 50% Emulsion at Shear $10s^{-1}$ [cP]	-	120	920	2,940
Viscosity of 75% Emulsion at Shear $10s^{-1}$ [cP]	-	780	2,970	7,130
Viscosity of Max Water Emulsion at Shear $10s^{-1}$ [cP]	-	-	5,960	11,700
Maximum Water Content in Emulsion [vol%]	-	80	80	80
Halftime for Water Uptake [h]	-	0.1	0.2	0.5
Stability Ratio	-	0	1	0.8

Key:
Table A. - = Not determined
% = percent
vol = volume
°C = degrees Celsius
°F = degrees Fahrenheit
cP = Centipoise
g/L = grams per Liter
h = hour

Source: Lerivik, F., T.J Schrader, and M.O. Moldestad, (2005).

Table A.1-8
Land Segment ID and the Percent Type of Environmental Sensitivity Index Shoreline Closest to the Ocean for United States, Alaska Shoreline

ID	Geographic Place Names	1B	1B	2A	3A	3C	4	5	6A	6B	7	8A	8B	8E	9A	9B	10 A	10 E	U
40	Ah-Gude-Le-Rock, Dry Creek, Lopp Lagoon, Mint River	-—	-—	1	16	0	-—	29	0	-—	19	6	-—	-—	8	-—	15	1	-—
41	Ikpek, Ikpek Lagoon, Pinguk River, Yankee River	-—	-—	4	30	2	-—	0	-—	-—	22	5	-—	-—	9	-—	14	2	-—
42	Arctic Lagoon, Kugrupaga Inlet, Nuluk River	-—	-—	3	10	2	-—	7	0	-—	9	17	-—	-—	17	-—	31	2	-—
43	Sarichef Island, Shishmaref Airport	-—	-—	1	24	3	1	3	-—	-—	9	13	-—	-—	31	0	9	2	-—
44	Cape Lowenstern, Egg Island, Shishmaref, Shishmaref Inlet	-—	-—	10	9	3	0	1	-—	-—	10	2	-—	-—	22	-—	26	-—	-—
45		-—	-—	1	5	5	-—	-—	-—	-—	5	18	-—	-—	15	-—	51	-—	-—
46	Cowpack Inlet and River, Kalik River, Kividlo, Singeak, Singeakpuk River	-—	-—	4	17	2	-—	-—	-—	-—	26	2	-—	-—	12	1	28	-—	-—
47	Kitluk River, Northwest Corner Light, West Fork Espenberg River	-—	-—	-—	24	12	-—	-—	-—	-—	16	14	-—	-—	4	-—	18	3	-—
48	Cape Espenberg, Espenberg, Espenberg River	0	-—	7	13	5	-—	6	9	-—	12	12	-—	-—	12	-—	20	1	-—
49	Kungealoruk Creek, Kougachuk Creek, Pish River	-—	-—	0	5	7	-—	20	-—	-—	3	4	-—	-—	16	-—	33	-—	-—
50	Clifford Point, Cripple River, Goodhope River, Rex Point, Sullivan Bluffs	-—	-—	-—	-—	-—	-—	24	18	-—	0	22	-—	-—	1	-—	14	-—	-—
51	Cape Deceit, Deering, Kugruk Lagoon and River, Sullivan Lake, Toawlevic Point	1	-—	-—	-—	1	1	23	6	-—	9	8	1	-—	2	-—	41	6	-—
52	Motherwood Point, Ninemile Point, Willow Bay	17	-—	-—	-—	3	-—	12	32	-—	2	-—	-—	-—	5	-—	17	12	-—
53	Kiwalik, Kiwalik Lagoon, Middle Channel Kiwalk River, Minnehaha Creek, Mud Channel Creek, Mud Creek	4	-—	-—	1	1	-—	13	10	-—	11	10	-—	-—	26	-—	22	2	-—
54	Baldwin Peninsula, Lewis Rich Channel	2	-—	-—	-—	2	-—	43	3	-—	3	6	-—	-—	0	-—	35	3	-—
55	Cape Blossom, Pipe Spit	-—	-—	-—	-—	10	-—	35	10	-—	-—	2	-—	-—	6	-—	9	20	-—
56	Kinuk Island, Kotzebue, Noatak River	-—	-—	-—	-—	3	-—	2	8	-—	4	5	0	-—	29	-—	47	-—	-—
57	Aukulak Lagoon, Igisukruk Mountain, Noak, Mount, Sheshalik, Sheshalik Spit	-—	-—	1	-—	-—	-—	37		-—	-—	1	-—	-—	22	-—	36	-—	-—
58	Cape Krusenstern, Eigaloruk, Evelukpalik River, Kasik Lagoon, Krusenstern Lagoon,	-—	-—	-—	-—	8	0	30	7	-—	4	3	-—	-—	2	-—	30	16	-—
59	Imik Lagoon, Ipiavik Lagoon, Kotlik Lagoon, Omikviorok River	0	0	-—	-—	1	-—	62	6	-—	3	6	-—	-—	2	-—	6	14	-—
60	Imikruk Lagoon, Imnakuk Bluff, Kivalina, Kivalina Lagoon, Singigrak Spit, Kivalina River, Wulik River	-—	-—	-—	-—	0	2	23	2	-—	1	5	-—	-—	8	-—	35	22	-—
61	Asikpak Lagoon,Cape Seppings,Kavrorak Lagoon,Pusaluk Lagoon,Seppings Lagoon	-—	-—	-—	-—	-—	3	32	13	-—	-—	2	-—	-—	-—	-—	-—	49	-—
62	Atosik Lagoon,Chariot,Ikaknak Pond,Kisimilok Mountain,Kuropak Creek,Mad Hill	-—	-—	-—	-—	-—	-—	100	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—
63	Akoviknak Lagoon, Cape Thompson, Crowbill Point, Igilerak Hill, Kemegrak Lagoon	7	-—	-—	-—	-—	-—	93	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—
64	Aiautak Lagoon, Ipiutak Lagoon, Kowtuk Point, Kukpuk River, Pingu Bluff, Point Hope, Sinigrok Point,	16	-—	-—	-—	-—	-—	82	3	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—
65	Buckland, Cape Dyer, Cape Lewis, Cape Lisburne	29	-—	-—	-—	-—	-—	60	5	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—
66	Ayugatak Lagoon	51	-—	-—	-—	-—	-—	46	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—
67	Cape Sabine, Pitmegea River	51	-—	-—	-—	9	-—	40	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—
68	Agiak Lagoon, Punuk Lagoon	—-	-—	-—	-—	10	-—	86	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—
69	Cape Beaufort, Omalik Lagoon	-—	-—	-—	-—	45	-—	50	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—	-—

Table A.1-8 (continued)

Land Segment ID and the Percent Type of Environmental Sensitivity Index Shoreline Closest to the Ocean for United States, Alaska Shoreline

ID	Geographic Place Names	1A	1B	2A	3A	3C	4	5	6A	6B	7	8A	8B	8E	9A	9B	10 A	10 E	U
70	Kuchaurak Creek, Kuchiak Creek	—	—	—	20	3	—	34	—	—	—	—	—	1	12	9	10	10	—
71	Kukpowruk River, Naokok, Sitkok Point	—	—	—	34	7	—	21	—	—	—	—	—	—	25	7	2	2	3
72	Kokolik River, Point Lay, Siksrikpak Point	—	—	—	30	3	—	7	—	—	—	—	—	3	19	19	—	5	14
73	Akunik Pass, Tungaich Point, Tungak Creek	—	—	—	27	14	—	7	—	—	—	—	—	—	19	8	—	3	22
74	Kasegaluk Lagoon, Solivik Island, Utukok River	—	—	—	21	8	—	1	—	—	—	—	—	—	19	9	—	—	43
75	Akeonik, Icy Cape, Icy Cape Pass	—	—	—	25	12	—	14	—	—	—	—	—	3	16	18	—	2	10
76	Akoliakatat Pass, Avak Inlet, Tunalik River	—	—	—	21	21	—	7	—	—	—	—	—	4	10	7	—	10	20
77	Nivat Point, Nokotlek Point, Ongorakvik River	—	—	—	47	10	—	30	—	—	—	—	—	—	2	9	1	1	1
78	Kuk River, Point Collie, Sigeakruk Point,	—	—	—	46	13	—	23	—	—	—	—	—	1	3	2	—	9	3
79	Point Belcher, Wainwright, Wainwright Inlet	—	—	—	26	26	—	37	—	—	—	—	—	—	—	11	—	—	—
80	Eluksingiak Point, Igklo River, Kugrua Bay	—	—	—	23	42	—	16	—	—	—	—	—	9	4	2	—	5	—
81	Peard Bay, Point Franklin, Seahorse Islands, Tachinisok Inlet	—	—	—	60	26	—	7	—	—	—	—	—	5	—	2	—	—	—
82	Skull Cliff	5	—	—	—	78	—	17	—	—	—	—	—	—	—	—	—	—	—
83	Nulavik, Loran Radio Station	1	—	—	—	91	—	8	—	—	—	—	—	—	—	—	—	—	—
84	Walakpa River, Will Rogers and Wiley Post Memorial	—	—	—	—	4	—	96	—	—	—	—	—	—	—	—	—	—	—
85	Barrow, Browerville, Elson Lagoon	—	—	—	—	—	20	38	—	—	2	—	—	28	—	—	—	10	1
86	Dease Inlet, Plover Islands, Sanigaruak Island	—	—	—	11	—	15	23	—	—	13	—	—	35	—	—	—	3	—
87	Igalik Island, Kulgurak Island, Kurgorak Bay, Tangent Point	—	—	—	7	—	4	5	—	—	7	—	—	34	27	3	—	13	—
88	Cape Simpson, Piasuk River, Sinclair River, Tulimanik Island	—	—	—	—	—	4	5	—	—	3	—	—	19	48	2	—	4	15
89	Ikpikpuk River, Point Poleakoon, Smith Bay	—	—	—	—	—	—	—	—	—	-	—	—	8	73	—	—	—	19
90	Drew Point, Kolovik, McLeod Point,	—	—	—	—	—	25	—	—	—	15	—	—	60	—	—	—	—	—
91	Lonely, Pitt Point, Pogik Bay, Smith River	—	—	—	—	—	9	8	—	—	4	—	—	27	30	—	—	—	22
92	Cape Halkett, Esook Trading Post, Garry Creek	—	—	—	0	3	16	—	—	—	5	—	—	72	—	—	—	4	—
93	Atigaru Point, Eskimo Islands, Harrison Bay,	—	—	—	15	27	8	2	—	—	2	—	—	16	—	—	1	22	7
94	Fish Creek, Tingmeachsiovik River	—	—	—	11	4	—	—	—	—	12	—	—	3	32	—	—	38	—
95	Anachlik Island, Colville River, Colville River Delta	—	—	—	7	2	—	—	—	—	42	—	—	2	36	—	1	8	—
96	Kalubik Creek, Oliktok Point, Thetis Mound,	—	—	—	19	0	—	12	1	—	8	—	—	9	1	—	—	25	25
97	Beechey Point, Bertoncini Island, Bodfish Island, Cottle Island, Jones Islands, Milne Point, Simpson Lagoon	—	—	—	41	5	—	18	—	—	7	—	—	8	0	—	—	10	11
98	Gwydyr Bay, Kuparuk River, Long Island	—	—	—	10	1	—	23	—	—	6	—	—	3	23	—	—	26	7
99	Duck Island, Foggy Island, Gull Island, Heald Point, Howe Island, Niakuk Islands, Point Brower	—	—	—	—	4	—	14	1	—	9	—	1	2	51	—	—	10	4

Table A.1-8 (continued)
Land Segment ID and the Percent Type of Environmental Sensitivity Index Shoreline Closest to the Ocean for United States, Alaska Shoreline

ID	Geographic Place Names	1A	1B	2A	3A	3C	4	5	6A	6B	7	8A	8B	8E	9A	9B	10 A	10 E	U
100	Foggy Island Bay, Kadleroshilik River, Lion Point, Shaviovik River, Tigvariak Island	—	—	—	10	1	—	8	-—	-—	27	-—	-—	4	5	-—	-—	39	5
101	Bullen Point, Point Gordon, Reliance Point	—	—	—	10	3	—	39	-—	-—	5	-—	-—	3	-—	-—	-—	25	15
102	Flaxman Island, Maguire Islands, North Star Island, Point Hopson, Point Sweeney, Point Thomson, Staines River	—	—	—	11	3	—-	37	2	-—	8	-—	-—	7	-—	-—	-—	14	18
103	Brownlow Point, Canning River, Tamayariak River	—	—	—	—	2	18	6	-—	-—	12	-—	-—	7	35	-—	-—	1	19
104	Camden Bay, Collinson Point, Katakturuk River, Konganevik Point, Simpson Cove	—	—	—	—	—	8	30	-—	-—	9	-—	-—	14	2	2	-—	10	26
105	Anderson Point, Carter Creek, Itkilyariak Creek, Kajutakrok Creek, Marsh Creek, Sadlerochit River	—	—	—	—	—	14	30	-—	-—	21	-—	-—	6	5	-—	2	—-	23
106	Arey Island, Arey Lagoon, Barter Island, Hulahula River, Okpilak River	—	—	—	—	—	2	7	-—	-—	23	-—	-—	14	10	-—	-—	—	43
107	Bernard Harbor, Jago Lagoon, Kaktovik, Kaktovik Lagoon	—	—	—	—	—	4	23	-—	-—	19	-—	-—	6	15	-—	-—	-—	34
108	Griffin Point, Oruktalik Lagoon, Pokok Lagoon	—	—	—	—	—	13	24	-—	-—	20	-—	-—	15	12	-—	1	-—	15
109	Angun Lagoon, Beaufort Lagoon, Nuvagapak Lagoon,	—	—	—	—	—	28	11	-—	-—	32	-—	-—	15	0	-—	-—	1	13
110	Aichilik River, Egaksrak Lagoon, Egaksrak River, Icy Reef, Kongakut River, Siku Lagoon	—	—	—	—	—	3	12	-—	-—	7	-—	-—	3	39	-—	-—	3	34
111	Demarcation Bay, Demarcation Point, Gordon, Pingokraluk Lagoon	—	—	—	—	—	9	51	-—	-—	14	-—	-—	8	1	-—	-—	-—	17

Key:
ID = identification (number).
1A= Exposed Rocky Shore
1B= Exposed Solid Man Made Structure
2A = Exposed Wave-cut Platforms in Bedrock, Mud or Clay
3A = Fine- to Medium-grained Sand Beaches.
3C = Tundra Cliffs.
4 = Coarse Grained Sand Beaches
5= Mixed Sand and Gravel Beaches.
6A = Gravel Beaches.
7 = Exposed Tidal Flats.
8A=Sheltered Rocky Shores and Sheltered Scarps in Bedrock, Mud or Clay
8B = Sheltered, Solid Man-made Structures.
8E = Peat Shorelines.
9A= Sheltered Tidal Flats
9B = Sheltered Vegetated Low Banks
10A = Salt- and Brackish- water Marshes.
10E = Inundated Low-lying Tundra.
U= Unranked.

Source:
USDOC, NOAA, (2002), Research Planning, Inc (2002).

Table A.1-9
Fate and Behavior of a Hypothetical 1,500-Barrel Crude Oil Spill from a Platform in the Chukchi Sea

	Summer Spill[1]				Meltout Spill[2]			
Time After Spill in Days	1	3	10	30	1	3	10	30
Oil Remaining (%)	71	67	62	41	71	66	61	55
Oil Dispersed (%)	0	0	1	2	0	1	2	5
Oil Evaporated (%)	29	33	37	57	29	33	37	40
Thickness (mm)	1	1	1	1	1.3	1	1	1
Discontinuous Area (km^2)[3, 4]	7	29	139	577	2	10	23	188
Estimated Coastline Oiled (km)[5]	25				30			

Table A.1-10
Fate and Behavior of a Hypothetical 4,600-Barrel Crude Oil Spill from a Pipeline in the Chukchi Sea

	Summer Spill[1]				Meltout Spill[2]			
Time After Spill in Days	1	3	10	30	1	3	10	30
Oil Remaining (%)	70	64	56	44	71	66	61	55
Oil Dispersed (%)	1	3	7	16	0	1	2	5
Oil Evaporated (%)	29	33	37	40	29	33	37	40
Thickness (mm)	1.01	1	1	1	1.3	1	1	1
Discontinuous Area (km^2)[3, 4]	12	51	243	1008	4	16	80	332
Estimated Coastline Oiled (km)[5]	42				51			

Table A.1-11
Fate and Behavior of a Hypothetical 1,500-Barrel Diesel Oil Spill from a Platform in the Chukchi Sea

	Summer Spill[1]				Meltout Spill[2]			
Time After Spill in Days	1	3	10	30	1	3	10	30
Oil Remaining (%)	80	47	68	-	88	65	20	0
Oil Dispersed (%)	11	40	68	-	3	11	40	53
Oil Evaporated (%)	9	23	31	-	9	24	40	47
Thickness (mm)	0.6	0.3	0.1	-	0.7	0.4	0.2	0.1

Notes:
Calculated with the SINTEF oil-weathering model Version 3.0 of Reed et al. (2005) and assuming an Alpine Composite crude type or Diesel oil. For the Alternative I Sale 193 and its alternatives, the median pipeline spill is assumed to be 4,600 barrels. For the Alternative I Sale193 and its alternatives, the median platform spill is assumed to be 1,500 barrels.

1 Summer (June 1-October 31), 8-knot wind speed, 2.7 degrees Celsius, 0.4-meter wave height.
2 Meltout Spill (November 1-May 31). Spill is assumed to occur into first-year pack ice, pools 2-centimeter thick on ice surface for 2 days at -1 degrees Celsius prior to meltout into 50% ice cover, 10-knot wind speed, and 0.1 meter wave heights.
3 This is the area of oiled surface.
4 Calculated from Equation 6 of Table 2 in Ford (1985) and is the discontinuous area of a continuing spill or the area swept by an instantaneous spill of a given volume. Note that ice dispersion occurs for about 30 days before meltout.
5 Calculated from Equation 17 of Table 4 in Ford (1985) and is the result of stepwise multiple regressions for length of historical coastline affected.

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-12 Identification Number (ID) and Name of Environmental Resource Areas, Their Vulnerable Period in the Oil Spill Trajectory Model and Their Location on Environmental Resource Area Map A.1-2a, Map A.1-2b, Map A.1-2c, or Map A.1-2d

ID	NAME	NAME 2	VULNERABLE	MAP	ID	NAME	VULNERABLE	MAP
1	Kasegaluk Lagoon	Solivik Isl., Icy Cape	May-October	A.1-2b	43	Nuiqsut Subsistence Area	August-October	A.1-2d
2	Point Barrow, Plover Islands	Elson Lag., Dease Inlet	May-October	A.1-2a	44	Kaktovik Subsistence Area	August-October	A.1-2c
3	ERA 3		September –October	A.1-2a	45	ERA 45	April –October	A.1-2b
4	ERA 4		January-December	A.1-2a	46	Herald Shoal Polynya	January-December	A.1-2a
5	ERA 5		April-September	A.1-2a	47	Ice/Sea Segment 10	January-December	A.1-2b
6	ERA 6		April –October	A.1-2c	48	Ice/Sea Segment 11	January-December	A.1-2a
7	Endicott Causeway		May-October	A.1-2d	49	Hanna's Shoal Polynya	January-December	A.1-2a
8	Maguire, Flaxman Islands		May-October	A.1-2c	50	Ice/Sea Segment 12	January-December	A.1-2a
9	Stockton Islands		May-October	A.1-2d	51	Ice/Sea Segment 13	January-December	A.1-2a
10	Ledyard Bay SPEI Critical Habitat		May-October	A.1-2d	52	Ice/Sea Segment 14	January-December	A.1-2b
11	Wrangel Island 12 nmi Buffer		January-December	A.1-2a	53	Ice/Sea Segment 15	January-December	A.1-2b
12	ERA 12		April-June	A.1-2d	54	Ice/Sea Segment 16a	January-December	A.1-2b
13	ERA 13		January-December	A.1-2a	55	Ice/Sea Segment 17	January-December	A.1-2d
14	ERA 14		May-October	A.1-2d	56	ERA 56	August – October	A.1-2b
15	ERA 15		May-October	A.1-2c	57	Ice/Sea Segment 19	January-December	A.1-2d
16	ERA 16		April-June	A.1-2a	58	Ice/Sea Segment 20a	January-December	A.1-2d
17	Angun and Beaufort Lagoons		May-October	A.1-2c	59	ERA 59	May-November	A.1-2a
18	ERA 18		May-October	A.1-2a	60	Ice/Sea Segment 22	January-December	A.1-2d
19	Chukchi Spring Lead 1		April-June	A.1-2a	61	ERA 61	April-December	A.1-2a
20	Chukchi Spring Lead 2		April-June	A.1-2b	62	Ice/Sea Segment 24a	January-December	A.1-2d
21	Chukchi Spring Lead 3		April-June	A.1-2b	63	ERA 63	July-October	A.1-2a
22	Chukchi Spring Lead 4		April-June	A.1-2b	64	Peard Bay	May-October	A.1-2d
23	Chukchi Spring Lead 5		April-June	A.1-2b	65	Smith Bay	May-October	A.1-2b
24	Beaufort Spring Lead 6		April-June	A.1-2b	66	ERA 66	May-October	A.1-2b
25	Beaufort Spring Lead 7		April-June	A.1-2b	67	Herschel Island	May-October	A.1-2c
26	Beaufort Spring Lead 8		April-June	A.1-2b	68	Harrison Bay	May-October	A.1-2b
27	Beaufort Spring Lead 9		April-June	A.1-2b	69	Harrison Bay/Colville Delta	May-October	A.1-2b
28	Beaufort Spring Lead 10		April-June	A.1-2b	70	ERA 70	July-October	A.1-2a
29	Ice/Sea Segment 1		September-October	A.1-2c	71	Simpson Lagoon, Thetis and Jones Island	May-October	A.1-2c
30	Ice/Sea Segment 2		September-October	A.1-2c	72	Gwyder Bay, Cottle, Return Islands W. Dock	May-October	A.1-2c
31	Ice/Sea Segment 3		September-October	A.1-2c	73	Prudhoe Bay	May-October	A.1-2c
32	Ice/Sea Segment 4		September-October	A.1-2c	74	Cross Island ERA	May-October	A.1-2d
33	Ice/Sea Segment 5		September-October	A.1-2c	75	Water over Boulder Patch	January-December	A.1-2c
34	Ice/Sea Segment 6		September-October	A.1-2c	76	ERA 76	January-December	A.1-2d
35	ERA 35		August-October	A.1-2c	77	Foggy Island Bay	May-October	A.1-2c
36	ERA 36		August-October	A.1-2b	78	Mikkelsen Bay	May-October	A.1-2c
37	ERA 37		April – June	A.1-2c	79	ERA 79	May-October	A.1-2c
38	Point Hope Subsistence Area		January-December	A.1-2a	80	ERA 80	May-October	A.1-2c
39	Point Lay Subsistence Area		January-December	A.1-2a	81	Simpson Cove	May-October	A.1-2c
40	Wainwright Subsistence Area		January-December	A.1-2a	82	ERA 82	September	A.1-2a
41	Barrow Subsistence Area 1		April-May	A.1-2a	83	Kaktovik ERA	May-October	A.1-2c
42	Barrow Subsistence Area 2		August-October	A.1-2a	99	ERA 99	May-October	*A.1-2b*

Source: USDOI, MMS, Alaska OCS Region (2006).

Table A.1-13
Environmental Resource Areas Used in the Analysis of Oil Spill Effects on Birds in Section IV.C

ID	NAME	MAP	VULNERABLE	GENERAL RESOURCE	SPECIFIC RESOURCE	REFERENCE
1	Kasegaluk Lagoon	A.1-2b	May-October	Birds, Barrier Island	**Birds**: BLBR, LTDU, STEI, COEI, loons (PALO, RTLO, and YBLO)	Lehnhausen and Quinlan, 1981; Johnson, 1993; Johnson, Wiggins, and Wainwright, 1993; Laing and Platte, 1994, Dau and Larned, 2004.
2	Point Barrow, Plover Islands	A.1-2a	May-October	Birds, Barrier Island	**Birds**: SPEI, LTDU	Troy, 2003; Fischer and Larned, 2004.
7	Endicott Causeway	A.1-2d	May-October	Birds, Barrier Island	**Birds**: nesting COEI, molting LTDU, Pacific loons	Johnson, Wiggins, and Wainwright, 1993; Johnson, 2000; Fischer and Larned, 2004.
8	Maguire, Flaxman Islands	A.1-2c	May-October	Birds, Barrier Island	**Birds**: nesting COEI, molting LTDU, Pacific loons	Johnson, Wiggins, and Wainwright, 1993; Johnson, 2000; Fischer and Larned, 2004; Flint et al., 2004; Johnson et al., 2005; Noel et al., 2005.
9	Stockton Islands	A.1-2d	May-October	Birds, Barrier Island	**Birds**: nesting COEI, molting LTDU, staging SPEI	Johnson, Wiggins, and Wainwright, 1993;; Johnson, 2000, Table 2; Troy, 2003; Fischer and Larned, 2004; Flint et al., 2004; Johnson et al., 2005; Noel et al., 2005, Table 1.
10	Ledyard Bay SPEI Critical Habitat	A.1-2d	May-October	Birds	**Birds**: seabirds, molting/staging SPEI, staging YBLO	Federal Register; 2001; Laing and Platte, 1994; Petersen et al., 1999; Piatt and Springer, 2003.
14	ERA 14	A.1-2d	May-October	Birds	**Birds**: seabirds, gulls, shorebirds, waterfowl, staging YBLO	Springer et al., 1984; Piatt et al., 1991; Piatt and Springer, 2003; Stephenson and Irons, 2003.
15	ERA 15	A.1-2c	May-October	Birds	**Birds:** seabird breeding colony, staging YBLO	Springer et al., 1984; Piatt et al., 1991; Roseneau et al., 2000; Piatt and Springer, 2003; Stephenson and Irons, 2003.
17	Angun and Beaufort Lagoons	A.1-2c	May-October	Birds, Barrier Island	**Birds**: molting LTDU, scoters, staging shorebirds	Johnson and Herter, 1989.
18	ERA 18	A.1-2a	May-October	Birds	**Birds**: seabird foraging area	Springer et al., 1984; Piatt and Springer, 2003.
19	Chukchi Spring Lead 1	A.1-2a	April-June	Whales, Birds, Marine Mammals, Birds	**Birds**: seabird foraging area; spring migration area for LTDU, eiders (KIEI and COEI), loons (spp?)	Connors, Myers, and Pitelka,1979; Sowls et al., 1978; Johnson and Herter, 1989; Piatt et al., 1991; Piatt and Springer, 2003.
20	Chukchi Spring Lead 2	A.1-2b	April-June	Whales, Birds, Marine Mammals	**Birds**: spring migration axis via lead system for LTDU, eiders (KIEI, COEI, probably SPEI), loons (spp?)	Swartz, 1967; Johnson and Herter, 1989; Stringer and Groves, 1991.
21	Chukchi Spring Lead 3	A.1-2b	April-June	Whales, Birds, Marine Mammals	**Birds**: spring migration axis via lead system for LTDU, eiders (KIEI and COEI), loons (spp?)	Swartz, 1967; Johnson and Herter, 1989; Stringer and Groves, 1991.
22	Chukchi Spring Lead 4	A.1-2b	April-June	Whales, Birds, Marine Mammals	**Birds**: spring migration axis via lead system for LTDU, eiders (KIEI and COEI), loons (spp?)	Swartz 1967; Johnson and Herter, 1989; Stringer and Groves, 1991.
23	Chukchi Spring Lead 5	A.1-2b	April-June	Whales, Birds, Marine Mammals	**Birds**: probable spring staging by SPEI and STEI; spring migration area for LTDU, eiders (KIEI and COEI), shorebirds, loons (spp?)	Connors, Myers, and Pitelka,1979; Sowls et al., 1978; Gill et al., 1985; Johnson and Herter, 1989.
64	Peard Bay	A.1-2d	July-October	Birds	**Birds**: eiders (SPEI, STEI, KIEI, COEI), loons (PALO, RTLO, and YBLO)	Laing and Platte, 1994; Fischer and Larned, 2004.
65	Smith Bay	A.1-2b	May-October	Birds, Marine Mammals	**Birds**: eiders (SPEI, KEI), loons (YBLO)	Earnst, et al., 2005; Powell, et al., 2005; Ritchie, Burgess, and Suydam, 2000; Ritchie et al., 2004; Troy, 2003.
67	Herschel Island	A.1-2c	May-October	Birds	**Birds**: LTDU, BLBR, scoters, eiders (spp?), loons (spp?), shorebirds	Vermeer and Anweiler, 1975; Richardson and Johnson, 1981; Johnson and Richardson, 1982.
68	Harrison Bay	A.1-2b	May-October	Birds, fish, marine mammals	**Birds**: eiders (KIEI, COEI), scoters (BLSC, SUSC), geese (BLBR, CAGO, WFGO), loons (spp?), and shorebirds	Connors et al., 1984; Dau and Larned, 2004; 2005; Fischer and Larned, 2004.

Table A.1-13 (Continued)
Environmental Resource Areas Used in the Analysis of Oil Spill Effects on Birds in Section IV.C

ID	NAME	MAP	VULNERABLE	GENERAL RESOURCE	SPECIFIC RESOURCE	REFERENCE
69	Harrison Bay/Colville Delta	A.1-2b	May-October	Birds, fish, marine mammals	**Birds**: geese (BLBR), eiders (KIEI, COEI), LTDU, scoters (BLSC, SUSC), and loons (PALO, RTLO, and YBLO)	Bergman et al.. 1977; Johnson and Herter. 1989; Dau and Larned. 2004; 2005; Fischer and Larned. 2004.
71	Simpson Lagoon, Thetis and Jones Island	A.1-2c	May-October	Birds, fish, marine mammals	**Birds**: geese (BLBR, LSGO, WFGO), eiders (COEI, KIEI), LTDU, scoters (SUSC, WWSC), shorebirds, and loons (PALO, RTLO, and YBLO)	Richardson and Johnson, 1981; Connors et al., 1984; Divoky, 1984; Johnson et al., 1987; Johnson and Herter, 1989; Stickney and Ritchie, 1996; Noel and Johnson, 1997; Truett et al., 1997; Johnson 2000.
72	Gwyder Bay, Cottle, Return Islands and West Dock	A.1-2c	May-October	Birds, Fish, Marine Mammals	**Birds**: geese (BLBR, LSGO, WFGO), eiders (COEI, KIEI), LTDU, scoters (SUSC, WWSC), shorebirds, and loons (PALO, RTLO, and YBLO)	Stickney and Ritchie, 1996; Noel and Johnson, 1997; Truett et al., 1997; Johnson, 2000; Troy, 2003; Fischer and Larned, 2004,; Noel et al., 2005; Powell et al., 2005.
73	Prudhoe Bay	A.1-2c	May-October	Birds, Fish, Marine Mammals	**Birds**: geese (BLBR, LSGO, WFGO), eiders (COEI, KIEI), LTDU, scoters (SUSC, WWSC), shorebirds, and loons (PALO, RTLO, and YBLO)	Richardson and Johnson, 1981; Johnson and Richardson, 1982; Stickney and Ritchie, 1996; Noel and Johnson, 1997; Truett et al. 1997; Troy 2003; Dau and Larned 2004; 2005; Fischer and Larned 2004; Noel et al. 2005; Powell et al. 2005
74	Cross Island ERA	A.1-2d	May-October	Birds	**Birds**: eiders (SPEI, COEI, LTDU, scoters (all 3 species), and loons (PALO, RTLO, and YBLO)	Divoky 1984; Johnson 2000; Troy 2003; Fig. 3; Dau and Larned 2004; 2005; Fischer and Larned 2004
76	ERA 76	A.1-2d	May-October	Birds	**Birds**: eiders (KIEI, COEI), LTDU, scoters (all 3 species), and loons (PALO, RTLO, and YBLO)	Divoky 1984; Richardson and Johnson 1981; Johnson and Richardson 1982; Alexander et al. 1997; Dickson et al. 1997;
77	Foggy Island Bay	A.1-2c	May-October	Birds	**Birds**: eiders SPEI, COEI, LTDU, scoters (all 3 species), and loons (PALO, RTLO, and YBLO)	Divoky 1984; Johnson 2000; Troy 2003; Dau and Larned 2004; 2005; Fischer and Larned 2004
78	Mikkelsen Bay	A.1-2c	May-October	Birds	**Birds**: eiders (KIEI, COEI), LTDU, scoters, and loons (PALO and RTLO)	Divoky 1984; Johnson 2000; Troy 2003; Dau and Larned 2004; 2005; Fischer and Larned 2004; Flint et al. 2004; Noel et al. 2005
79	ERA 79	A.1-2c	May-October	Birds	**Birds**: eiders (KIEI, COEI), LTDU, scoters (SUSC, WWSC), and loons (spp?)	Richardson and Johnson 1981; Johnson and Richardson 1982; Johnson and Herter 1989; Dau and Larned 2004; 2005; Fischer and Larned 2004
81	Simpson Cove	A.1-2c	May-October	Birds	**Birds**: COEI, LTDU, PALO, scoters (SUSC, WWSC)	Johnson and Herter 1989; Dau and Larned 2004; 2005; Fischer and Larned 2004
83	Kaktovik ERA	A.1-2c	May-October	Birds	**Birds**: COEI, LTDU, loons (PALO, RTLO, and YBLO)	Divoky 1984; Johnson and Herter 1989; Dau and Larned 2004; 2005; Fischer and Larned 2004

Notes: Yellow-billed Loon (YBLO), Red-throated Loon (RTLO), Pacific Loon (PALO), Arctic Loon (ARLO), COEI (Common Eider), KIEI (King Eider), SPEI (Spectacled Eider), STEI (Steller's Eider), LTDU (Long-tailed Duck), Black Scoter (BLSC), Surf Scoter (SUSC), White-winged Scoter (WWSC), Black Brant (BLBR), White-fronted Goose (WFGO), Canada Goose (CAGO), Lesser Snow Goose (LSGO)

Source: USDOI, MMS, Alaska OCS Region (2006).

Table A.1-14
Environmental Resource Areas Used in the Analysis of Oil Spill Effects on Whales in Section IV.C

ID	NAME	MAP	VULNERABLE	GENERAL RESOURCE	SPECIFIC RESOURCE	REFERENCE
6	ERA 6	A.1-2c	April-October	Whales	Bowhead Whales	Mel'nikov et al., 2004.
12	ERA 12	A.1-2d	April-June	Whales	Bowhead Whales	Ljungblad, D.K. et al., 1986.
16	ERA 16	A.1-2b	June-September	Whales	Bowhead Whales, Grey Whales	Mel'nikov and Bobkov, 1993.
19	Chukchi Spring Lead 1	A.1-2a	April-June	Whales, Birds, Marine Mammals	Bowhead Whales, Grey Whales	Stringer and Groves, 1991; Ljungblad, D.K. et al., 1986.
20	Chukchi Spring Lead 2	A.1-2b	April-June	Whales, Birds, Marine Mammals	Bowhead Whales, Grey Whales	Stringer and Groves, 1991; Ljungblad, D.K. et al., 1986.
21	Chukchi Spring Lead 3	A.1-2b	April-June	Whales, Birds, Marine Mammals	Bowhead Whales, Grey Whales	Stringer and Groves, 1991; Ljungblad, D.K. et al., 1986.
22	Chukchi Spring Lead 4	A.1-2b	April-June	Whales, Birds, Marine Mammals	Bowhead Whales, Grey Whales	Stringer and Groves, 1991; Ljungblad, D.K. et al., 1986.
23	Chukchi Spring Lead 5	A.1-2b	April-June	Whales, Birds, Marine Mammals	Bowhead Whales, Grey Whales	Stringer and Groves, 1991; Ljungblad, D.K. et al., 1986.
24	Beaufort Spring Lead 6	A.1-2b	April-June	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986.
25	Beaufort Spring Lead 7	A.1-2b	April-June	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986.
26	Beaufort Spring Lead 8	A.1-2b	April-June	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986
27	Beaufort Spring Lead 9	A.1-2b	April-June	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986.
28	Beaufort Spring Lead 10	A.1-2b	April-June	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986.
29	Ice/Sea Segment 1	A.1-2c	September-October	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986; Treacy, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002; Monnett and Treacy 2005.
30	Ice/Sea Segment 2	A.1-2c	September-October	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986; Treacy, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002; Monnett and Treacy 2005.
31	Ice/Sea Segment 3	A.1-2c	September-October	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986; Treacy, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002; Monnett and Treacy 2005.
32	Ice/Sea Segment 4	A.1-2c	September-October	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986; Treacy, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002; Monnett and Treacy 2005.

Table A.1-14 (Continued)
Environmental Resource Areas Used in the Analysis of Oil Spill Effects on Whales in Section IV.C

ID	NAME	MAP	VULNERABLE	GENERAL RESOURCE	SPECIFIC RESOURCE	REFERENCE
33	Ice/Sea Segment 5	A.1-2c	September-October	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986; Treacy, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002; Monnett and Treacy, 2005.
34	Ice/Sea Segment 7	A.1-2c	September-October	Whales, Birds, Marine Mammals	Bowhead Whales	Ljungblad, D.K. et al., 1986; Treacy, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002; Monnett and Treacy, 2005.
35	ERA 35	A.1-2c	August-October	Whales	Bowhead Whales	Ljungblad, D.K. et al., 1986.
36	ERA 36	A.1-2b	August-October	Whales	Bowhead Whales	Ljungblad, D.K. et al., 1986.
37	ERA 37	A.1-2c	April-June	Whales		Ljungblad, D.K. et al., 1986; Treacy, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002; Monnett and Treacy, 2005.
45	ERA 45	A.1-2b	April-October	Whales		Ljungblad, D.K. et al., 1986.
49	Hanna's Shoal Polynya	A.1-2a	January-December	Whales		Ljungblad, D.K. et al., 1986; Stringer and Groves 1991.
56	ERA 56	A.1-2b	August-October	Whales		Ljungblad, D.K. et al., 1986.
61	ERA 61	A.1-2a	April-December	Whales	Fin Whales	Melnikov
63	ERA 63	A.1-2a	July-October	Whales	Bowhead Whales	
65	Smith Bay	A.1-2b	May-October	Whales, Birds	Bowhead Whales	Ljungblad, D.K. et al., 1986; Treacy, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002; Monnett and Treacy, 2005.
70	ERA 70	A.1-2a	July-October	Whales	Bowhead Whales	
80	ERA 80	A.1-2c	April-June	Whales,	Bowhead Whales	Ljungblad, D.K. et al., 1986; Treacy, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2000, 2001, 2002; Monnett and Treacy, 2005.
82	ERA 82	A.1-2a	September	Whales		Mel'nikov and Bobkov, 1993

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-15
Environmental Resource Areas Used in the Analysis of Oil Spill Effects on Subsistence Resources in Section IV.C

ID	NAME	MAP	VULNERABLE	GENERAL RESOURCE	SPECIFIC RESOURCE	REFERENCE
3	ERA 3	Map A.1-2a	September-October	Subsistence	Bowhead Whales, Grey Whales, Walrus	Mel'nikov and Bobkov, 1993
4	ERA 4	Map A.1-2a	January-December	Subsistence	Bowhead Whales, Grey Whales, Walrus	Mel'nikov and Bobkov, 1993
5	ERA 5	Map A.1-2a	April-September	Subsistence	Polar Bears, Walrus, Seals	Sobelman, 1985; Wisniewski, 2005
13	ERA 13	Map A.1-2a	January-December	Subsistence	Polar Bears, Walrus, Seals, Bowhead Whales, Beluga Whales	Burch, 1985
38	Point Hope Subsistence Area	Map A.1-2a	January-December	Subsistence	Beluga Whales, Bowhead Whales, Walrus, Seals	Braund & Burnham, 1984
39	Point Lay Subsistence Area	Map A.1-2a	January-December	Subsistence	Fish, Seals, Waterfowl, Beluga Whales	Braund & Burnham, 1984; Impact Assessment, 1989; Huntington and Mymrin, 1996; USDOI, BLM, 2003
40	Wainwright Subsistence Area	Map A.1-2a	January-December	Subsistence	Bowhead Whales, Beluga Whales	Braund & Burnham, 1984; Braund & Associates, 1993, Kassam and Wainwright Traditional Council, 2001; USDOI, BLM, 2003
41	Barrow Subsistence Area 1	Map A.1-2a	April-May	Subsistence	Bowhead Whales, Beluga Whales, Walrus, Waterfowl, Seals, Ocean Fish	Braund & Burnham, 1984; S.R. Braund & Associates, 1993; North Slope Borough, 2001; USDOI, BLM, 2003
42	Barrow Subsistence Area 2	Map A.1-2a	August-October	Subsistence	Bowhead Whales, Beluga Whales, Walrus, Waterfowl, Seals, Ocean Fish	Braund & Burnham, 1984; Braund & Associates, 1993; North Slope Borough, 2001; USDOI, BLM, 2003
43	Nuiqsut Subsistence Area	Map A.1-2d	August-October	Subsistence	Bowhead Whales, Seals, Waterfowl, Ocean Fish	Impact Assessment, 1990; USDOI, MMS, 2001; North Slope Borough, 2001
44	Kaktovik Subsistence Area	Map A.1-2c	August-October	Subsistence	Bowhead Whales, Seals, Walrus, Beluga Whales, Waterfowl, Ocean Fish	Impact Assessment, 1990; USDOI, MMS, 1997; North Slope Borough, 2001

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-16
Land Segment ID and the Geographic Place Names within the Land Segment

ID	Geographic Place Names	ID	Geographic Place Names
1	Mys Blossom, Mys Fomy, Khishchnikov, Neozhidannaya, Laguna Vaygan	32	Mys Dzhenretlen, Eynenekvyk, Lit'khekay-Polar Station
2	Mys Gil'der, Ushakovskiy, Mys Zapadnyy	33	Neskan, Laguna Neskan, Mys Neskan
3	Mys Florens, Gusinaya	34	Emelin, Ostrov Idlidlya, I, Memino, Tepken,
4	Mys Ushakova, Laguna Drem-Khed	35	Enurmino, Mys Keylu, Netakeniskhvin, Mys Neten,
5	Mys Evans, Neizvestnaya, Bukhta Pestsonaya	36	Mys Chechan, Mys Ikigur, Keniskhvik, Mys Serditse Kamen
6	Ostrov Mushtakova	37	Chevgtun, Utkan, Mys Volnistyy
7	Kosa Bruch	38	Enmytagyn, Inchoun, Inchoun, Laguna Inchoun, Mitkulino, Uellen, Mys Unikin
8	Klark, Mys Litke, Mys Pillar, Skeletov, Mys Uering	39	Cape Dezhnev, Mys Inchoun, Naukan, Mys Peek, Uelen, Laguna Uelen, Mys Uelen
9	Nasha, Mys Proletarskiy, Bukhta Rodzhers	40	Ah-Gude-Le-Rock, Dry Creek, Lopp Lagoon, Mint River
10	Reka Berri, Bukhta Davidova, , Khishchnika, Reka Khishchniki	41	, Ikpek, Ikpek Lagoon, Pinguk River, Yankee River
11	Bukhta Somnitel'naya	42	Arctic Lagoon, Kugrupaga Inlet, Nuluk River
12	Zaliv Krasika, Mamontovaya, Bukhta Predatel'skaya	43	Sarichef Island, Shishmaref Airport
13	Mys Kanayen, Mys Kekurnyy, Mys Shalaurova, Veyeman	44	Cape Lowenstern, Egg Island, Shishmaref, Shishmaref Inlet
14	Innukay, Laguna Innukay, Umkuveyem, Mys Veuman	45	
15	Laguna Adtaynung, Mys Billingsa, Ettam, Gytkhelen, Laguna Uvargina	46	Cowpack Inlet, Cowpack River, Kalik River, Kividlo, Singeak, Singeakpuk River, White Fish Lake
16	Mys Emmatagen, Mys Enmytagyn, Uvargin	47	Kitluk River, Northwest Corner Light, West Fork Espenberg River
17	Enmaat'khyr, Kenmankautir, Mys Olennyy, Mys Yakan, Yakanvaam, Yakan	48	Cape Espenberg, Espenberg, Espenberg River
18	Mys Enmykay, Laguna Olennaya, Pil'khikay, Ren, Rovaam, Laguna Rypil'khin	49	Kungealoruk Creek, Kougachuk Creek, Pish River
19	Laguna Kuepil'khin, Leningradskiy	50	Clifford Point, Cripple River, Goodhope Bay, Goodhope River, Rex Point, Sullivan Bluffs
20	, Kuekvun', Notakatryn, Pil'gyn, Tynupytku	51	Cape Deceit, Deering, Kugruk Lagoon, Kugruk River, Sullivan Lake, Toawlevic Point
21	Laguna Kinmanyakicha, Laguna Pil'khikay, Amen, Pil'khikay, Bukhta Severnaya, Val'korkey	52	Motherwood Point, Ninemile Point, Willow Bay
22	Ekiatan', Laguna Ekiatan, Kelyun'ya, Mys Shmidta, Rypkarpi	53	Kiwalik, Kiwalik Lagoon, Middle Channel Kiwalk River, Minnehaha Creek, Mud Channel Creek, Mud Creek
23	Emuem, Kemuem, Koyvel'khveyergin, Laguna Tengergin, Tenkergin	54	Baldwin Peninsula, Lewis Rich Channel
24		55	Cape Blossom, Pipe Spit
25	Laguna Amguema, Ostrov Leny, Yulinu	56	Kinuk Island, Kotzebue, Noatak River
26	Ekugvaam, Reka Ekugvam, Kepin, Pil'khin	57	Aukulak Lagoon, Igisukruk Mountain, Noak, Mount, Sheshalik, Sheshalik Spit
27	Laguna Nut, Rigol'	58	Cape Krusenstern, Eigaloruk, Evelukpalik River, Kasik Lagoon, Krusenstern Lagoon,
28	Kamynga, Ostrov Kardkarpko, Kovlyuneskin, Mys Vankarem, Vankarema, Laguna Vankarema	59	Imik Lagoon, Ipiavik Lagoon, Kotlik Lagoon, Omikviorok River
29	Akanatkhyrgyn, Nel'teyveyam, Mys Onman, Vel'may	60	Imikruk Lagoon, Imnakuk Bluff, Kivalina, Kivalina Lagoon, Singigrak Spit, Kivalina River, Wulik River
30	Laguna Kunergin, Nutepynmyn, Pyngopil'khin, Laguna Pyngopil'khin	61	Asikpak Lagoon,Cape Seppings,Kavrorak Lagoon,Pusaluk Lagoon,Seppings Lagoon
31	Alyatki, Zaliv Tasytkhin, Kolyuchin Bay	62	Atosik Lagoon,Chariot,Ikaknak Pond,Kisimilok Mountain,Kuropak Creek,Mad Hill

Table A.1-16(Continued)
Land Segment ID and the Geographic Place Names within the Land Segment

ID	Geographic Place Names	ID	Geographic Place Names
63	Akoviknak Lagoon, Cape Thompson, Crowbill Point, Igilerak Hill, Kemegrak Lagoon	96	Kalubik Creek, Oliktok Point, Thetis Mound,
64	Aiautak Lagoon, Ipiutak Lagoon, Kowtuk Point, Kukpuk River, Pingu Bluff, Point Hope, Sinigrok Point, Sinuk	97	Beechey Point, Bertoncini , Bodfish, Cottle and, Jones Islands, Milne Point, Simpson Lagoon
65	Buckland, Cape Dyer, Cape Lewis, Cape Lisburne	98	Gwydyr Bay, Kuparuk River, Long Island
66	Ayugatak Lagoon	99	Duck Island, Foggy Island, Gull Island, Heald Point, Howe Island, Niakuk Islands, Point Brower
67	Cape Sabine, Pitmegea River	100	Foggy Island Bay, Kadleroshilik River, Lion Point, Shaviovik River, Tigvariak Island
68	Agiak Lagoon, Punuk Lagoon	101	Bullen Point, Point Gordon, Reliance Point
69	Cape Beaufort, Omalik Lagoon	102	Flaxman Island, Maguire Islands, North Star Island, Point Hopson, Point Sweeney, Point Thomson, Staines River
70	Kuchaurak Creek, Kuchiak Creek	103	Brownlow Point, Canning River, Tamayariak River
71	Kukpowruk River, Naokok, Naokok Pass, Sitkok Point	104	Camden Bay, Collinson Point, Katakturuk River, Konganevik Point, Simpson Cove
72	Epizetka River, Kokolik River, Point Lay, Siksrikpak Point	105	Anderson Point, Carter Creek, Itkilyariak Creek, Kajutakrok Creek, Marsh Creek, Sadlerochit River
73	Akunik Pass, Tungaich Point, Tungak Creek	106	Arey Island, Arey Lagoon, Barter Island, Hulahula River, Okpilak River
74	Kasegaluk Lagoon, , Solivik Island, Utukok River	107	Bernard Harbor, Jago Lagoon, Kaktovik, Kaktovik Lagoon
75	Akeonik, Icy Cape, Icy Cape Pass	108	Griffin Point, Oruktalik Lagoon, Pokok Lagoon
76	Akoliakatat Pass, Avak Inlet, Tunalik River	109	Angun Lagoon, Beaufort Lagoon, Nuvagapak Lagoon,
77	Mitliktavik, Nivat Point, Nokotlek Point, Ongorakvik River	110	Aichilik River, Egaksrak Lagoon, Egaksrak River, Icy Reef, Kongakut River, Siku Lagoon
78	Kilmantavi, Kuk River, Point Collie, Sigeakruk Point,	101	Demarcation Bay, Demarcation Point, Gordon, Pingokraluk Lagoon
79	Point Belcher, Wainwright, Wainwright Inlet	112	Clarence Lagoon, Backhouse River
80	Eluksingiak Point, Igklo River, Kugrua Bay	113	Komakuk Beach, Fish Creek
81	Peard Bay, Point Franklin, Seahorse Islands, Tachinisok Inlet	114	Nunaluk Spit
82	Skull Cliff	115	Herschel Island
83	Nulavik, Loran Radio Station	116	Ptarmagin Bay
84	Walakpa River, Will Rogers and Wiley Post Memorial	117	Roland & Phillips Bay, Kay Point
85	Barrow, Browerville, Elson Lagoon	118	Sabine Point
86	Dease Inlet, Plover Islands, Sanigaruak Island	119	Shingle Point
87	Igalik Island, Kulgurak Island, Kurgorak Bay, Tangent Point	120	Trent and Shoalwater Bays
88	Cape Simpson, Piasuk River, Sinclair River, Tulimanik Island	121	Shallow Bay, West Channel
89	Ikpikpuk River, Point Poleakoon, Smith Bay	120	Trent and Shoalwater Bays
90	Drew Point, Kolovik, McLeod Point,	121	Shallow Bay, West Channel
91	Lonely AFS Airport, Pitt Point, Pogik Bay, Smith River	122	
92	Cape Halkett, Esook Trading Post, Garry Creek	123	Outer Shallow Bay, Olivier Islands
93	Atigaru Point, Eskimo Islands, Harrison Bay, Kalikpik River, Saktuina Point	124	Middle Channel, Gary Island
94	Fish Creek, Tingmeachsiovik River	125	Kendall Island
95	Anachlik Island, Colville River, Colville River Delta	126	North Point, Pullen Island

Key: ID = identification (number).

Table A.1-17
Assumptions about How Launch Areas are Serviced by Pipelines for the Oil-Spill-Trajectory Analysis for the Alternative I, The Proposed Action, Alternative III, Corridor I and Alternative IV, Corridor II

Alternative I		Alternative III		Alternative IV	
Spill Box	Serviced by Pipelines	Spill Box	Serviced by Pipelines	Spill Box	Serviced by Pipelines
LA01	P02, P03, P04, P05, P06	LA01	P02, P03, P04, P05, P06	LA01	P02, P03, P04, P05, P06
LA02	P04, P05, P06	LA02	P04, P05, P06	LA02	P04, P05, P06
LA03	P07, P08, P09	LA03	P07, P08, P09	LA03	P07, P08, P09
LA04	P02, P03	LA04	P02, P03	LA04	P02, P03
LA05	P05, P06	LA05	P05, P06	LA05	P05, P06
LA06	P08, P09	LA06	P08, P09	LA06	P08, P09
LA07	P10, P11	LA07	P10, P11	LA07	P10, P11
LA08	P10, P11	LA08a	P10, P11	LA08	P10, P11
LA09	P01	LA09a	P01	LA09c	P01
LA10	P03	LA10a	P03	LA10c	P03
LA11	P06	LA11a	P06	LA11c	P06
LA12	P09	LA12a	P09	LA12c	P09
LA13	P11	LA13a	P11	LA13c	P11

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-18
Pipeline Spill Frequency Triangular Distribution Properties

GOM OCS Pipeline Spills, Categorized 1972-99		Low Factor	High Factor	Frequency spill per 10^5 km-years				
				Historical	Low	Mode	High	Expected
By Diameter, By Spill Size								
<10”	**Small**	0	2.57	3.7974	0	1.6329	9.7592	5.1720
	Medium	0	2.57	6.6454	0	2.8575	17.0786	9.0510
	Large	0	2.57	3.7974	0	1.6329	9.7592	5.1720
	Huge	0	2.57	0.9493	0	0.4082	2.4398	1.2930
≥10"	**Small**	0	2.57	2.4436	0	1.0507	6.2800	3.3282
	Medium	0	2.57	6.1090	0	2.6269	15.7001	8.3205
	Large	0	2.57	7.3308	0	3.1522	18.8401	9.9846
	Huge	0	2.57	2.4436	0	1.0507	6.2800	3.3282

Source:
Bercha Group, Inc. (2006a).

Table A.1-19
Platform Spill Frequency Triangular Distribution Properties

Spill Size	Frequency Unit	Low Factor	High Factor	Historical	Low	Mode	High	Expected
Small and Medium Spills 50-999 bbl	**spill per 10^4 well-year**	0	2.88	1.5036	0.0000	0.1804	4.3303	2.1571
Large and Huge Spills ≥ 1000 bbl	**spill per 10^4 well-year**	0	2.88	0.2506	0.0000	0.0301	0.7217	0.3595

Source:
Bercha Group, Inc. (2006a).

Table A.1-20
Well Blowout Spill Frequency Triangular Distribution Properties

Event	FREQUENCY UNIT	Low Factor	High Factor	Frequencies				
				Historical	Low	Mode	High	Expected
				Small and Medium Spills 50-999 bbl				
Production Well	spill per 10^4 well-year	0.448	1.545	0.147	0.066	0.148	0.227	0.147
Exploration Well Drilling	spill per 10^4 wells	0.439	2.036	1.966	0.863	1.032	4.002	2.262
Development Well Drilling	spill per 10^4 wells	0.437	1.760	0.654	0.286	0.526	1.151	0.692
				Large Spills 1000-9999 bbl				
Production Well	spill per 10^4 well-year	0.448	1.545	1.028	0.460	1.037	1.588	1.026
Exploration Well Drilling	spill per 10^4 wells	0.439	2.036	13.754	6.039	7.220	28.001	15.824
Development Well Drilling	spill per 10^4 wells	0.437	1.760	4.570	1.998	3.671	8.041	4.833
				Small, Medium and Large Spills 50-9999 bbl				
Production Well	spill per 10^4 well-year	0.448	1.545	1.175	0.526	1.185	1.815	1.173
Exploration Well Drilling	spill per 10^4 wells	0.439	2.036	15.719	6.903	8.252	32.003	18.086
Development Well Drilling	spill per 10^4 wells	0.437	1.760	5.224	2.284	4.197	9.192	5.525
				Large Spill 10000-149999 bbl				
Production Well	spill per 10^4 well-year	0.448	1.545	0.441	0.197	0.444	0.681	0.440
Exploration Well Drilling	spill per 10^4 wells	0.439	2.036	5.909	2.595	3.102	12.031	6.799
Development Well Drilling	spill per 10^4 wells	0.437	1.760	1.963	0.858	1.577	3.454	2.076
				Huge Spill ≥150000 bbl				
Production Well	spill per 10^4 well-year	0.448	1.545	0.294	0.132	0.296	0.454	0.293
Exploration Well Drilling	spill per 10^4 wells	0.439	2.036	3.421	1.502	1.796	6.965	3.936
Development Well Drilling	spill per 10^4 wells	0.437	1.760	1.963	0.858	1.577	3.454	2.076

Source:
Bercha Group, Inc. (2006a).

Table A.1-21 Pipeline Arctic Effect Derivation Summary

CAUSE CLASSIFICATION	Spill Size	Shallow	Medium	Deep	Reason
		Historical Expected Frequency Change %			
CORROSION					
External	**All**	(30)	(30)	(30)	Low temperature and bio effects. Extra smart pigging.
Internal	**All**	(30)	(30)	(30)	Extra smart pigging.
THIRD PARTY IMPACT					
Anchor Impact	**All**	(50)	(50)	(50)	Low traffic.
Jackup Rig or Spud Barge	**All**	(50)	(50)	(50)	Low facility density.
Trawl/Fishing Net	**All**	(50)	(60)	(70)	Low fishing activity. Less bottom fishing in deeper water.
OPERATION IMPACT					
Rig Anchoring	**All**	(20)	(20)	(20)	Low marine traffic during ice season (8 months).
Work Boat Anchoring	**All**	(20)	(20)	(20)	Low work boat traffic during ice season (8 months).
MECHANICAL					
Connection Failure	**All**				
Material Failure	**All**				
NATURAL HAZARD					
Mud Slide	**All**	(60)	(50)	(40)	Gradient low. Mud slide potential (gradient) increases with water depth.
Storm/ Hurricane	**All**	(50)	(50)	(50)	Fewer severe storms.
		Freq. Increment per 10^5 km-year			
		Expected	**Expected**	**Expected**	
		Mode	**Mode**	**Mode**	
ARCTIC					
Ice Gouging	**S**	0.3495	0.2796		Ice gouge failure rate calculated using exponential failure distribution for 2.5-m cover, 0.2-m average gouge depth, 2 gouges per km-yr flux. Spill size Distribution explained in text Section 2.5.2. Medium depth has 0.8 as many gouges as shallow.
		0.0680	0.0544		
	M	0.6178	0.4943		
		0.1210	0.0968		
	L	1.3438	1.0750		
		0.2610	0.2088		
	H	0.3762	0.3010		
		0.0730	0.0584		
Strudel Scour	**S**	0.0021			Only in shallow water. Average frequency of 4 scours/mile2 and 100 ft of bridge length with 10% conditional Pipelines failure probability. The same spill size distribution as above.
		0.0012			
	M	0.0038			
		0.0020			
	L	0.0082			
		0.0045			
	H	0.0023			
		0.0012			
Upheaval Buckling	**S**	0.0004	0.0004	0.0004	All water depth. The failure frequency is 20% of that of Strudel Scour.
		0.0002	0.0002	0.0002	
	M	0.0008	0.0008	0.0008	
		0.0004	0.0004	0.0004	
	L	0.0016	0.0016	0.0016	
		0.0009	0.0009	0.0009	
	H	0.0005	0.0005	0.0005	
		0.0002	0.0002	0.0002	
Thaw Settlement	**S**	0.0002	0.0002	0.0002	All water depth. The failure frequency is 10% of that of Strudel Scour.
		0.0001	0.0001	0.0001	
	M	0.0004	0.0004	0.0004	
		0.0002	0.0002	0.0002	
	L	0.0008	0.0008	0.0008	
		0.0004	0.0004	0.0004	
	H	0.0002	0.0002	0.0002	
		0.0001	0.0001	0.0001	
Other	**S**	0.8881	0.0701	0.0002	25% Sum of above.
		0.0174	0.0137	0.0001	
	M	0.1557	0.01238	0.0003	
		0.0309	0.0244	0.0002	
	L	0.3386	0.2694	0.0006	
		0.06667	0.0525	0.0003	
	H	0.0948	0.0754	0.0002	
		0.0187	0.0147	0.0001	

Source: Bercha Group, Inc (2006a).

Table A.1-22
Pipeline Arctic Effect Distribution Derivation Summary

CAUSE CLASSIFICATION	Spill Size	Shallow			Medium			Deep		
		Frequency Change %								
		Min	Mode	Max	Min	Mode	Max	Min	Mode	Max
CORROSION										
External	**All**	(90)	(30)	(10)	(90)	(30)	(10)	(90)	(30)	(10)
Internal	**All**	(90)	(30)	(10)	(90)	(30)	(10)	(90)	(30)	(10)
THIRD PARTY IMPACT										
Anchor Impact	**All**	(90)	(50)	(10)	(90)	(50)	(10)	(90)	(50)	(10)
Jackup Rig or Spud Barge	**All**	(90)	(50)	(10)	(90)	(50)	(10)	(90)	(50)	(10)
Trawl/Fishing Net	**All**	(90)	(50)	(10)	(90)	(60)	(10)	(90)	(70)	(10)
OPERATION IMPACT										
Rig Anchoring	**All**	(50)	(20)	(10)	(50)	(20)	(10)	(50)	(20)	(10)
Work Boat Anchoring	**All**	(50)	(20)	(10)	(50)	(20)	(10)	(50)	(20)	(10)
MECHANICAL										
Connection Failure	**All**									
Material Failure	**All**									
NATURAL HAZARD										
Mud Slide	**All**	(90)	(60)	(10)	(90)	(50)	(10)	(90)	(40)	(10)
Storm/ Hurricane	**All**	(90)	(50)	(10)	(90)	(50)	(10)	(90)	(50)	(10)
		Frequency Increment per 10^5 km-year								
ARCTIC										
Ice Gouging	**S**	0.0060	0.0680	0.8290	0.0048	0.0544	0.6632			
	M	0.0090	0.1210	1.4670	0.0072	0.0968	1.1736			
	L	0.0210	0.2610	3.1900	0.0168	0.2088	2.5520			
	H	0.0060	0.0730	0.8930	0.0048	0.0584	0.7144			
Strudel Scour	**S**	0.0004	0.0012	0.0044						
	M	0.0006	0.0020	0.0078						
	L	0.0014	0.0045	0.0170						
	H	0.0004	0.0012	0.0048						
Upheaval Buckling	**S**	0.00007	0.00023	0.00088	0.00007	0.00023	0.00088	0.00007	0.00023	0.00088
	M	0.00013	0.00041	0.00156	0.00013	0.00041	0.00156	0.00013	0.00041	0.00156
	L	0.00028	0.00089	0.00340	0.00028	0.00089	0.00340	0.00028	0.00089	0.00340
	H	0.00008	0.00025	0.00095	0.00008	0.00025	0.00095	0.00008	0.00025	0.00095
Thaw Settlement	**S**									
	M									
	L									
	H									
Other	**S**	0.00161	0.01735	0.20858	0.00122	0.01366	0.16602	0.00002	0.00006	0.00022
	M	0.00244	0.03086	0.36910	0.00183	0.02430	0.29379	0.00003	0.00010	0.00039
	L	0.00567	0.06659	0.80260	0.00427	0.05242	0.63885	0.00007	0.00022	0.00085
	H	0.00162	0.01862	0.22468	0.00122	0.01466	0.17884	0.00002	0.00006	0.00024

Key:
S= Small
M= Medium
L=Large
H=Huge

Source:
Bercha Group, Inc. (2006a).

Table A.1-23
Platform Arctic Effect Derivation Summary

CAUSE CLASSIFICATION	Spill Size	Shallow	Medium	Deep	Reason
		Historical Expected Frequency Change %			
CORROSION					
External	All	(30)	(30)	(30)	Low temperature and bio effects. Extra smart pigging.
Internal	All	(30)	(30)	(30)	Extra smart pigging.
THIRD PARTY IMPACT					
Anchor Impact	All	(50)	(50)	(50)	Low traffic.
Jackup Rig or Spud Barge	All	(50)	(50)	(50)	Low facility density.
Trawl/Fishing Net	All	(50)	(60)	(70)	Low fishing activity. Less bottom fishing in deep water.
OPERATION IMPACT					
Rig Anchoring	All	(20)	(20)	(20)	Low marine traffic during ice season (8 months).
Work Boat Anchoring	All	(20)	(20)	(20)	Low work boat traffic during ice season (8 months).
MECHANICAL					
Connection Failure	All				
Material Failure	All				
NATURAL HAZARD					
Mud Slide	All	(60)	(50)	(40)	Gradient low. Mud slide potential (gradient) increases with water depth.
Storm/ Hurricane	All	(50)	(50)	(50)	Fewer severe storms.
		Freq. Increment per 10^5 km-year			
		Expected	Expected	Expected	
		Mode	Mode	Mode	
ARCTIC					
Ice Gouging	S	0.3495	0.2796		Ice gouge failure rate calculated using exponential failure distribution for 2.5-m cover, 0.2-m average gouge depth, 2 gouges per km-yr flux. Spill size Distribution explained in text Section 2.5.2. Medium depth has 0.8 as many gouges as shallow.
		0.0680	0.0544		
	M	0.6178	0.4943		
		0.1210	0.0968		
	L	1.3438	1.0750		
		0.2610	0.2088		
	H	0.3762	0.3010		
		0.0730	0.0584		
Strudel Scour	S	0.0021			Only in shallow water. Average frequency of 2 scours/mile^2 and 100 ft of bridge length with 10% conditional P/L failure probability. The same spill size distribution as above.
		0.0012			
	M	0.0038			
		0.0020			
	L	0.0082			
		0.0045			
	H	0.0023			
		0.0012			
Upheaval Buckling	S	0.0004	0.0004	0.0004	All water depth. The failure frequency is 20% of that of Strudel Scour.
		0.0002	0.0002	0.0002	
	M	0.0008	0.0008	0.0008	
		0.0004	0.0004	0.0004	
	L	0.0016	0.0016	0.0016	
		0.0009	0.0009	0.0009	
	H	0.0005	0.0005	0.0005	
		0.0002	0.0002	0.0002	
Thaw Settlement	S				
	M				
	L				
	H				
Other	S	0.0880	0.0700	0.0001	To be assessed as 25% of above.
		0.0173	0.0137	0.0001	
	M	0.1556	0.1238	0.0002	
		0.0309	0.0243	0.0001	
	L	0.3384	0.2692	0.0004	
		0.0666	0.0524	0.0002	
	H	0.0947	0.0754	0.0001	
		0.0186	0.0147	0.0001	

Source: Bercha Group, Inc.(2006a).

Table A.1-24
Platform Arctic Effect Distribution Derivation Summary

CAUSE CLASSIFICATION	Spill Size	Shallow			Medium			Deep		
		Frequency Change %								
		Min	Mode	Max	Min	Mode	Max	Min	Mode	Max
CORROSION										
External	**All**	(90)	(30)	(10)	(90)	(30)	(10)	(90)	(30)	(10)
Internal	**All**	(90)	(30)	(10)	(90)	(30)	(10)	(90)	(30)	(10)
THIRD PARTY IMPACT										
Anchor Impact	**All**	(90)	(50)	(10)	(90)	(50)	(10)	(90)	(50)	(10)
Jackup Rig or Spud Barge	**All**	(90)	(50)	(10)	(90)	(50)	(10)	(90)	(50)	(10)
Trawl/Fishing Net	**All**	(90)	(50)	(10)	(90)	(60)	(10)	(90)	(70)	(10)
OPERATION IMPACT										
Rig Anchoring	**All**	(50)	(20)	(10)	(50)	(20)	(10)	(50)	(20)	(10)
Work Boat Anchoring	**All**	(50)	(20)	(10)	(50)	(20)	(10)	(50)	(20)	(10)
MECHANICAL										
Connection Failure	**All**									
Material Failure	**All**									
NATURAL HAZARD										
Mud Slide	**All**	(90)	(60)	(10)	(90)	(50)	(10)	(90)	(40)	(10)
Storm/ Hurricane	**All**	(90)	(50)	(10)	(90)	(50)	(10)	(90)	(50)	(10)
		Frequency Increment per 10^5 km-year								
ARCTIC										
Ice Gouging	**S**	0.0060	0.0680	0.8290	0.0048	0.0544	0.6632			
	M	0.0090	0.1210	1.4670	0.0072	0.0968	1.1736			
	L	0.0210	0.2610	3.1900	0.0168	0.2088	2.5520			
	H	0.0060	0.0730	0.8930	0.0048	0.0584	0.7144			
Strudel Scour	**S**	0.0004	0.0012	0.0044						
	M	0.0006	0.0020	0.0078						
	L	0.0014	0.0045	0.0170						
	H	0.0004	0.0012	0.0048						
Upheaval Buckling	**S**	0.00007	0.00023	0.00088	0.00007	0.00023	0.00088	0.00007	0.00023	0.00088
	M	0.00013	0.00041	0.00156	0.00013	0.00041	0.00156	0.00013	0.00041	0.00156
	L	0.00028	0.00089	0.00340	0.00028	0.00089	0.00340	0.00028	0.00089	0.00340
	H	0.00008	0.00025	0.00095	0.00008	0.00025	0.00095	0.00008	0.00025	0.00095
Thaw Settlement	**S**									
	M									
	L									
	H									
Other	**S**	0.00161	0.01735	0.20858	0.00122	0.01366	0.16602	0.00002	0.00006	0.00022
	M	0.00244	0.03086	0.36910	0.00183	0.02430	0.29379	0.00003	0.00010	0.00039
	L	0.00567	0.06659	0.80260	0.00427	0.05242	0.63885	0.00007	0.00022	0.00085
	H	0.00162	0.01862	0.22468	0.00122	0.01466	0.17884	0.00002	0.00006	0.00024

Key:
S= Small
M= Medium
L=Large
H=Huge

Source:
Bercha Group, Inc. (2006a).

Table A.1-25
Estimated Mean Number of Large Platform, Pipeline and Total Spills for Alternative I, the Proposed Action (Sale 193) and its Alternatives Over the Production Life

Alternative		Mean Number of Platform Spills	Mean Number of Pipeline Spills	Mean Number of Spills Total
I	Proposed Action	0.21	0.30	0.51
II	No Sale	0	0	0
III	Corridor I	0.13	0.19	0.33
IV	Corridor II	0.18	0.25	0.43

Note: Total equals the sum of mean platform and pipeline spills

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-26
Estimated Chance of One or More Large Platform, Pipeline and Total Spills for Alternative I, the Proposed Action (Sale 193) and its Alternatives Over the Production Life

Alternative		Percent Chance of One or More Platform Spills	Percent Chance of One or More Pipeline Spills	Percent Chance of One or More Spills Total
I	Proposed Action	19	26	40
II	No Sale	0	0	0
III	Corridor I	12	17	28
IV	Corridor II	16	22	35

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-27

Estimated Mean Number of Total Spills and Chance of One or More for Alternative I, the Proposed Action (Sale 193) and its Alternatives Using Spill Rates at the 95% Confidence Interval Over the Production Life

Alternative		95% CI Mean Number of Spills Total	Percent Chance of One or More Spills Total
I	Proposed Action	0.32-0.77	27-54
II	No Sale	0	0
III	Corridor I	0.20-0.49	18-39
IV	Corridor II	0.27-0.65	24-48

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-28
Small Crude-Oil Spills: Estimated Spill Rates for the Alaska North Slope

Small Crude-Oil Spills ≤500 barrels, 1989-2000	
Total Volume of Spills	135,127 gallons
—	3,217 barrels
Total Number of Spills	1,178 spills
Average Spill Size	2.7 barrels
Production (Crude Oil)	6.6 billion barrels
Spill Rate	178 spills/billion barrels of crude oil produced

Note:
Oil-spill databases are from the ADEC, Anchorage, Juneau, and Fairbanks. Alaska North Slope production data are derived from the TAPS throughput data from Alyeska Pipeline.
Source:
USDOI, MMS, Alaska OCS Region (2003).

Small Crude-Oil Spills > 500 barrels and <1,000, 1985-2000	
Total Volume of Spills	171,150 gallons
—	4,075 barrels
Total Number of Spills	6
Average Spill Size	680 barrels
Production (Crude Oil)	9.36 billion barrels
Spill Rate	0.64 spills/billion barrels of crude oil produced

Note:
Oil-spill databases are from the ADEC, Anchorage, Juneau, and Fairbanks. BP Alaska Inc. and Arco. Alaska North Slope production data are derived from the TAPS throughput data from Alyeska Pipeline.
Source:
USDOI, MMS, Alaska OCS Region (2003).

Table A.1-29
Small Crude-Oil Spills: Assumed Spills over the Production Life of the Chukchi Sea Sale 193

Sale 193 Alternative	Assumed Small Crude-Oil Spills <500 barrels				
	Resources (Bbbl)[1]	Spill Rate (Spills/Bbbl)	Assumed Spill Size (bbl)	Estimated Number of Spills	Estimated Total Spill Volume (bbl)
I Proposed Action	1	178	3	178	534
II No Sale	0	178	3	0	0
III Corridor I	0.640	178	3	114	342
IV Corridor II	0.845	178	3	152	453
Alternative	**Assumed Small Crude-Oil Spills ≥ 500 and ≤1,000 barrels**				
I Proposed Action	1	0.64	680	0.64	680
II No Sale	0	0.64	680	0	0
III Corridor I	0.640	0.64	680	0.41	680
IV Corridor II	0.845	0.64	680	0.54	680

Note:
[1]The estimation of oil spills is based on the estimated resources. If these resources are not produced then no oil spills occur.

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-30
Small Crude-Oil Spills: Assumed Size Distribution over the Production Life of the Chukchi Sea Sale 193

Size[2]	Distribution % in ADEC database	Alternative I Proposed Action	Alternative II No Sale	Alternative III Corridor I	Alternative IV Corridor II
<1 gallon	19.14	34	0	22	29
>1 and ≤5 gallons	35.37	63	0	40	53
>5 gallons and <1 bbl	20.41	36	0	23	31
Total <1 bbl		133	0	85	113
≥1 bbl and ≤bbl 5	20.61	36	0	23	31
>5 and ≤25 bbl	3.92	7	0	4	6
> 25 and <500 bbl	1.4	2	0	2	2
≥500 and ≤1,000 bbl	--	1	0	1	1
Total >1 and ≤1,000 bbl		46	0	30	40
Total Volume (bbl)		1,214	0	1,022	1,133

Notes:
[1] Estimated number of spills is rounded to the nearest whole number.
[2] Spill-size distributions are allocated by multiplying the total estimated number of spills by the fraction of spills in that size category from the Alaska Department of Environmental Conservation (ADEC) database.

Source:
USDOI, MMS, Alaska OCS Region (2006).

Table A.1-31
Small Refined-Oil Spills: Estimated Rate for the Alaska North Slope

Estimated Small Refined Spill Rate for the Alaska North Slope, 1989-2000	
Total Volume of Spills	94,195 gallons
	2,243 barrels
Total Number of Spills	2,915 spills
Average Spill Size	0.7 barrels (29 gallons)
Production (Crude Oil)	6.6 billion barrels
Spill Rate	440 spills/billion barrels of crude oil produced

Source: USDOI, MMS, Alaska OCS Region (2003).

Table A.1-32
Small Refined-Oil Spills: Assumed Spills over the Production Life of the Chukchi Sea Sale 193

Sale193 and its Alternatives	Resource Range (Bbbl)	Spill Rate (Spills/Bbbl)	Average Spill Size (bbl)	Estimated Number of Spills[1]	Estimated Total Spill Volume (bbl)[1]
I Proposed Action	1	440	0.7 (29 gal)	440	308
II No Sale	0	440	0.7 (29 gal)	0	0
III Corridor I	0.6402	440	0.7 (29 gal)	282	197
IV Corridor II	0.8457	440	0.7 (29 gal)	373	250

Note:
[1] The fractional estimated mean spill number and volume is rounded to the nearest whole number.

Key:

Bbbl = Billion barrels.
bbl = barrel.
gal = gallon.

Source:
USDOI, MMS, Alaska OCS Region (2006).

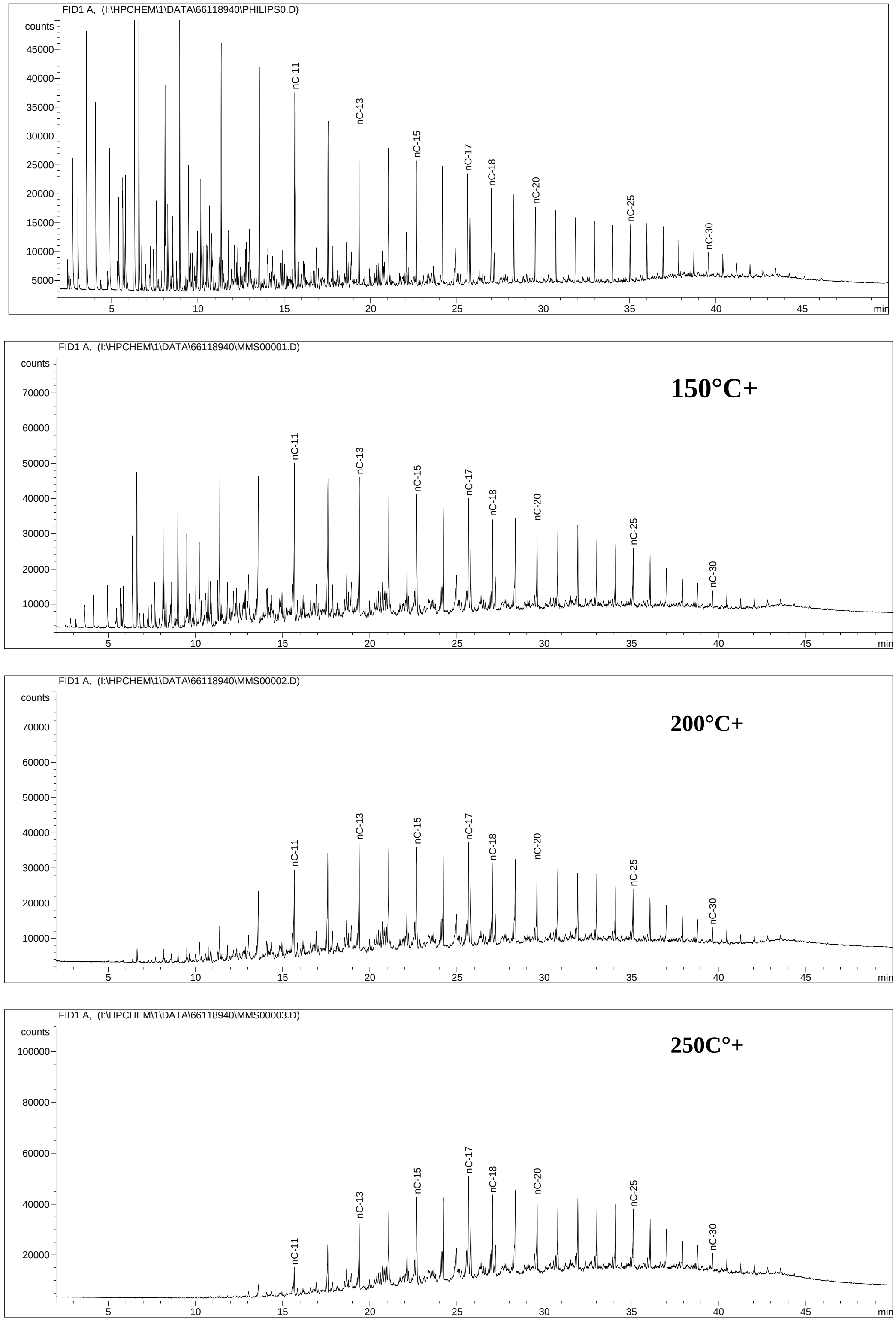


Figure A.1-3. Gas Chromatograms for the Fresh Alpine Composite and its Evaporated Residues

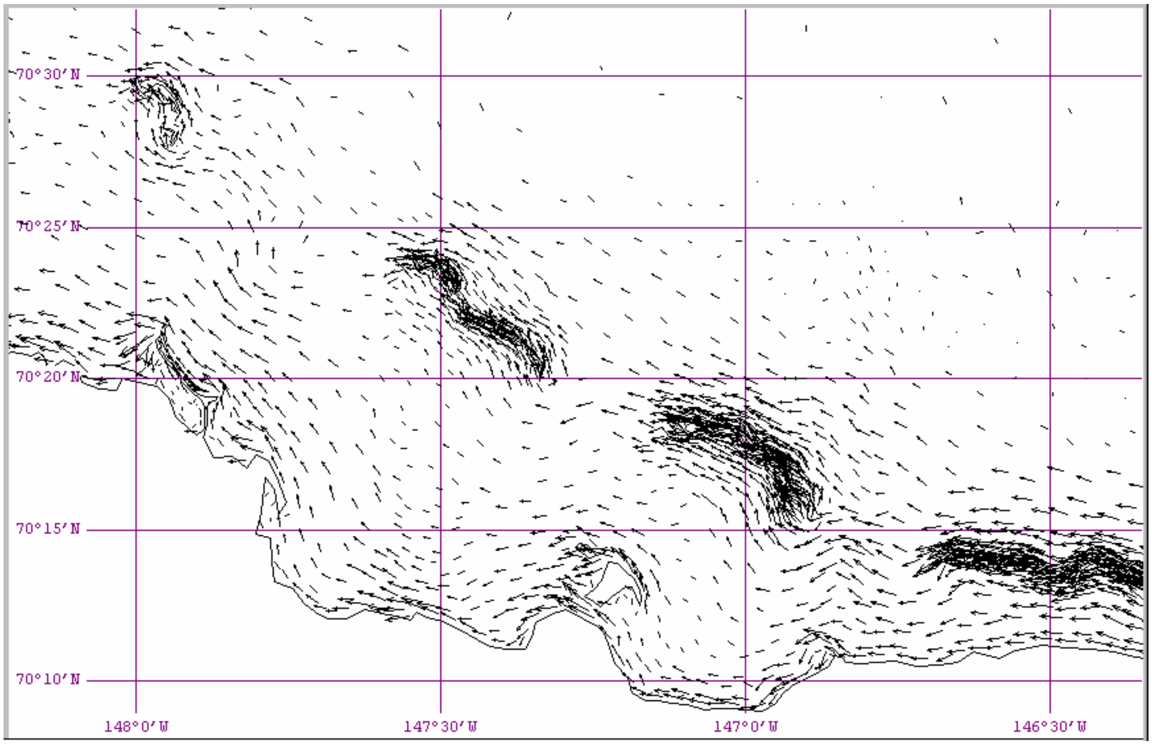


Figure A.1-4. Nearshore Surface Currents Simulated by the NOAA Model for a Wind from the East at 10 Meters Per Second

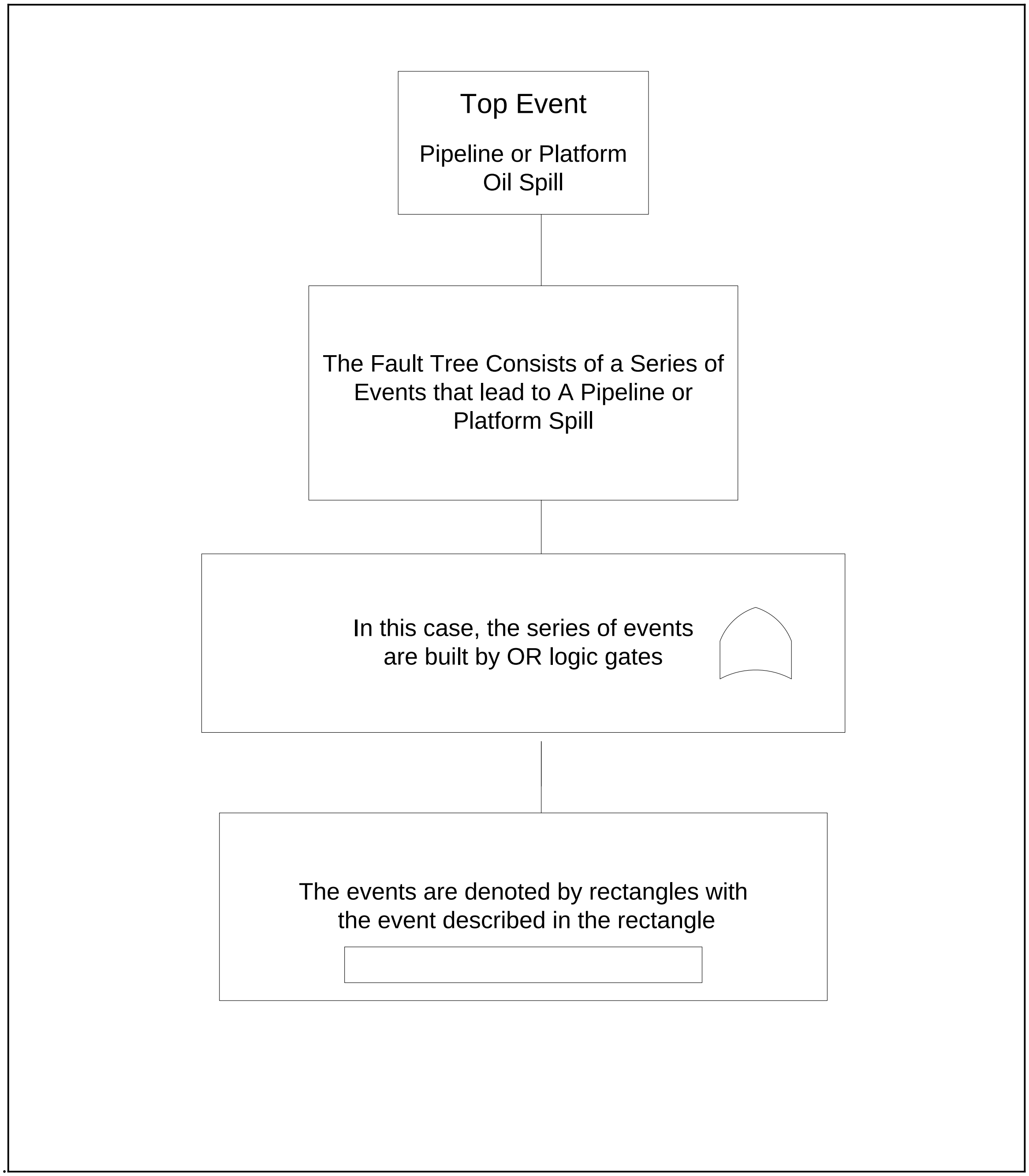


Figure A.1-5. Basic Parts of a Fault Tree

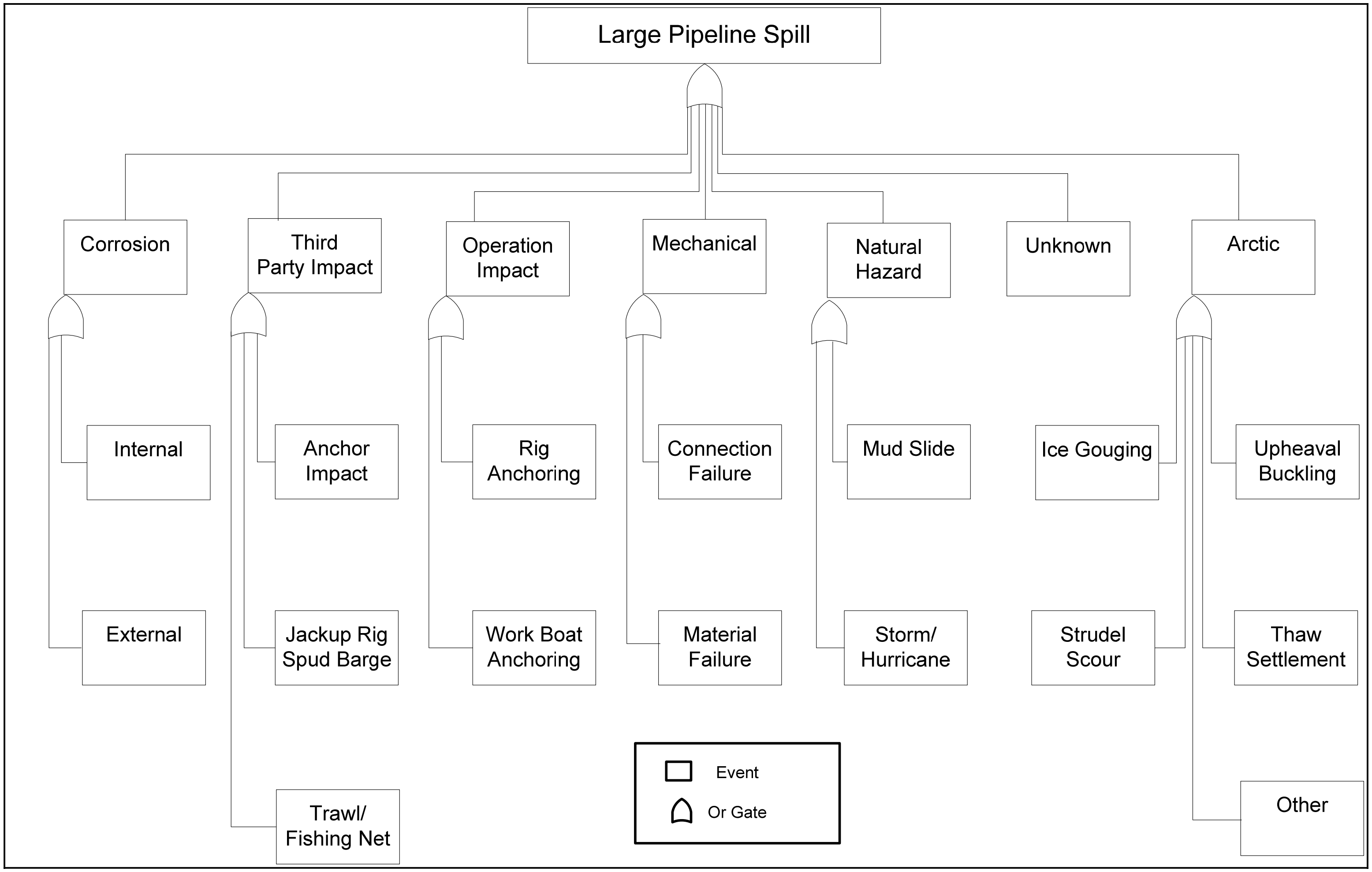


Figure A.1-6. Typical Fault Tree for A Pipeline Spill

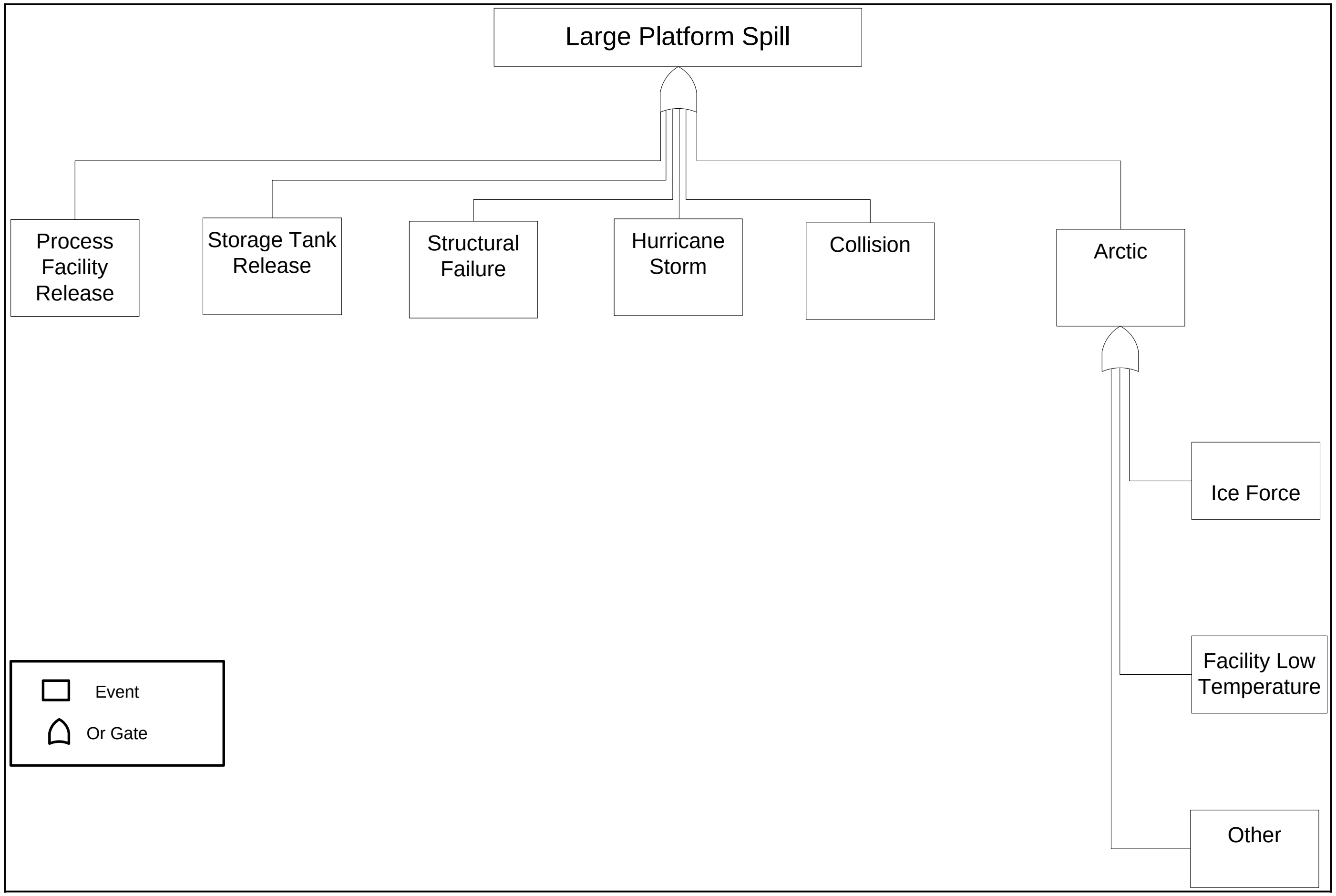


Figure A.1-7. Typical Fault Tree for a Platform Spill

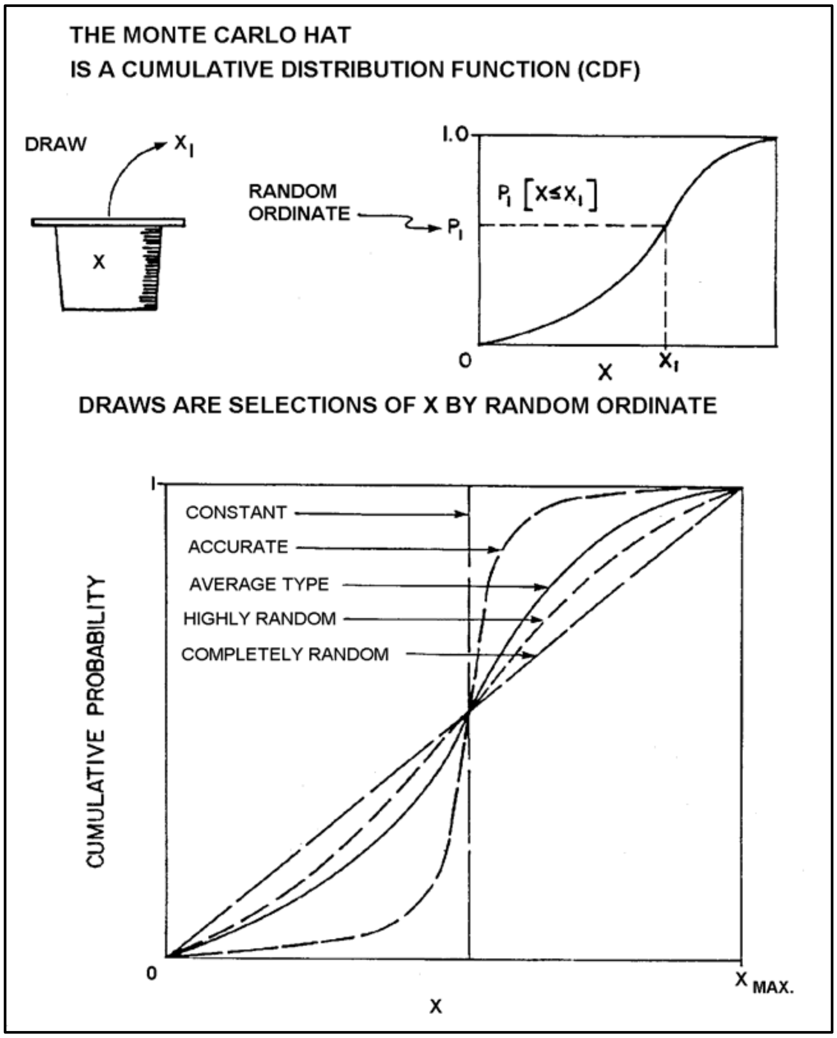
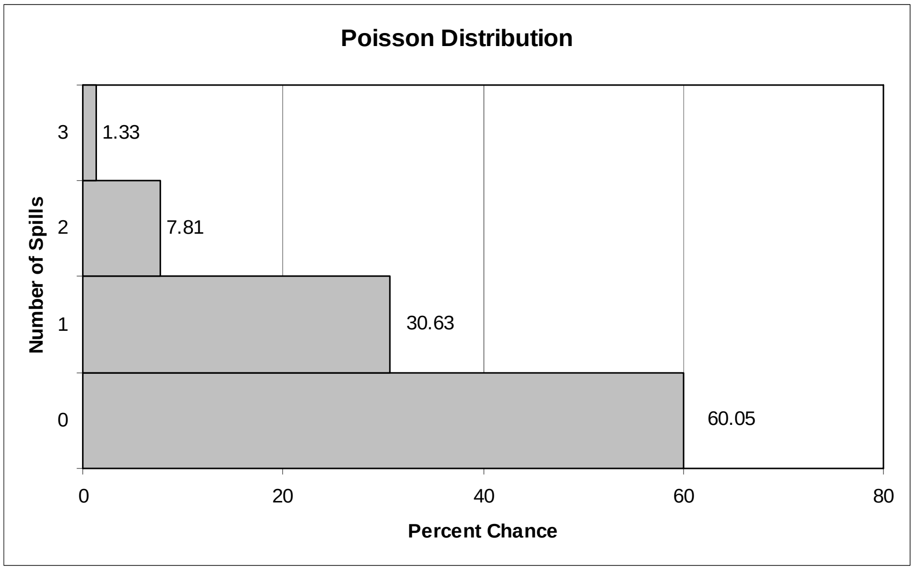
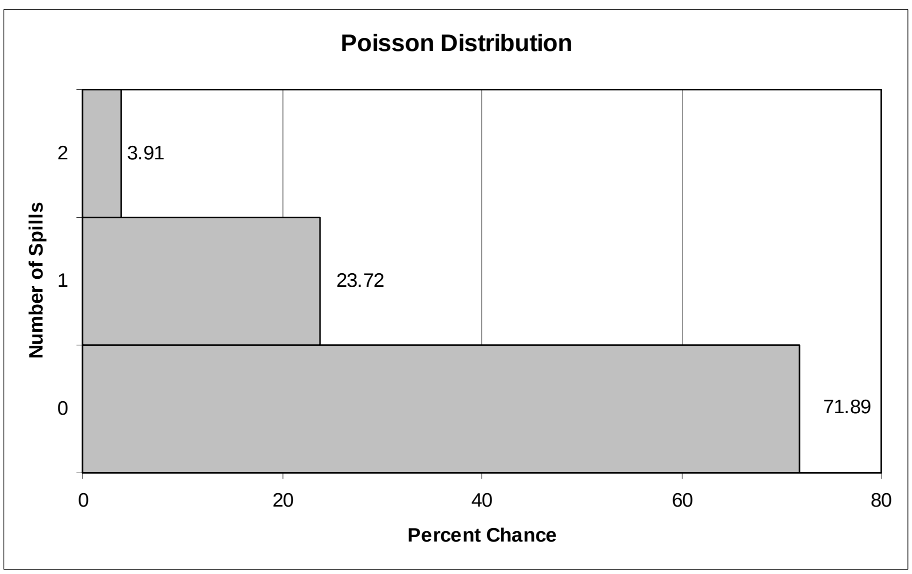


Figure A.1-8. Schematic of Monte Carlo Process as a Cumulative Distribution Function



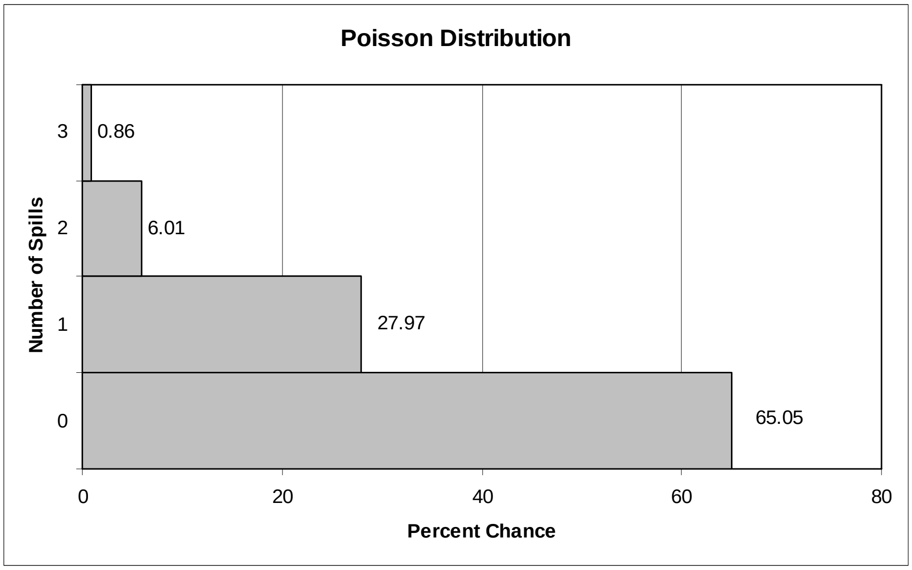
Mean Number of Spills = 0.51
Percent Chance of One or More = 40%
Percent Chance of No Spills = 60%
Most Likely Number = 0

Figure A.1-9. Poisson Distribution: Alternative I, Proposed Action, Total (Pipeline and Platform) over the Production Life



Mean Number of Spills = 0.33
Percent Chance of One or More = 28%
Percent Chance of No Spills = 72%
Most Likely Number = 0

Figure A.1-10. Poisson Distribution Alternative III, Corridor I Total (Pipeline and Platform) over the Production Life



Mean Number of Spills = 0.43
Percent Chance of One or More = 35%
Percent Chance of No Spills = 65%
Most Likely Number = 0

Figure A.1-11. Poisson Distribution Alternative IV, Corridor II, Total (Pipeline and Platform) over the Production Life

APPENDIX A.2

SUPPORTING TABLES FOR THE OSRA APPENDIX

Appendix A.2 Table List

Table **Titles**

Table A.2-1 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 3 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	Land	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1	-	-	6	-	-	2	-	4
1	Kasegaluk Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-
6	ERA 6	-	-	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	-	-	15	-	25
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	-	-	-	-	-	-	6	4	-	-	-	-	12	-	-	31	-	-	-	-	-
14	ERA 14	-	-	-	-	-	-	-	-	3	-	-	-	-	18	-	1	-	-	-	-	-	-	-	-
15	ERA 15	-	-	-	-	-	-	-	-	3	1	-	-	-	24	-	14	-	-	-	-	-	-	-	-
18	ERA 18	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	1	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	14	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
35	ERA 35	-	-	-	-	-	-	-	-	-	-	3	16	13	-	-	-	-	-	-	-	6	17	-	18
36	ERA 36	-	-	-	-	3	-	-	-	-	11	14	-	-	-	-	1	-	6	15	-	-	-	-	-
38	Pt. Hope Subsistence Area	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	2	-	-	-	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	26	-	-	-	-	-
40	Wainwright Subsistence Area	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	4	-	-	23	-	2
41	Barrow Subsistence Area 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
45	ERA 45	-	-	-	-	-	-	-	-	3	-	-	-	-	14	-	5	-	-	-	-	-	-	-	-
46	Herald Shoal Polynya	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
47	Ice/Sea Segment 10	2	-	-	10	13	-	-	-	-	-	-	-	-	-	3	-	1	7	-	-	-	-	-	-
48	Ice/Sea Segment 11	-	-	-	-	2	25	-	-	-	-	2	1	-	-	-	-	-	1	-	9	39	-	-	-
49	Hanna's Shoal Polynya	-	1	22	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-
50	Ice/Sea Segment 12	-	-	-	-	-	-	-	-	-	-	3	17	-	-	-	-	-	-	-	-	27	1	-	-
51	Ice/Sea Segment 13	-	-	-	-	-	-	-	-	-	-	-	10	10	-	-	-	-	-	-	-	-	-	-	25
52	Ice/Sea Segment 14	-	-	-	-	-	-	-	8	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-
56	ERA 56	-	-	-	-	-	7	5	-	-	-	1	14	1	-	-	-	-	-	-	3	18	2	-	1
64	Peard Bay	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	15
99	ERA 99	-	-	-	-	5	-	-	-	-	21	28	-	-	-	-	1	-	12	29	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-2 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 10 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	-	-	-	-	-	-	-	-	1	4	3	2	4	7	-	4	-	-	17	-	-	7	-	10
1	Kasegaluk Lagoon	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	1	-	-	10	-	-	1	-	-
2	Point Barrow, Plover Islands	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
6	ERA 6	-	-	-	-	-	-	-	1	-	-	1	6	9	-	-	-	-	-	-	-	-	21	1	30
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	-	1	-	-	-	1	12	7	-	-	2	-	16	-	-	34	-	-	-	-	-
14	ERA 14	-	-	-	-	-	-	-	-	5	1	-	-	-	21	-	3	-	-	-	-	-	-	-	-
15	ERA 15	-	-	-	-	-	-	-	-	7	4	-	-	-	27	-	17	-	-	1	-	-	-	-	-
18	ERA 18	-	-	-	1	-	-	-	-	9	1	-	-	-	7	1	2	-	-	-	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	9	-	1	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	6	-	-	2	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	11	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	1	-	-	16	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	11
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Spring Lead 7	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
29	Ice/Sea Segment 1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
35	ERA 35	-	-	-	-	-	1	1	2	-	-	5	19	16	-	-	-	-	1	1	-	9	19	2	21
36	ERA 36	-	-	-	3	5	1	-	-	-	13	17	2	-	-	3	2	-	9	18	-	2	3	-	-
38	Pt. Hope Subsistence Area	-	-	-	-	-	-	-	-	2	-	-	-	-	13	-	4	-	-	-	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	-	-	-	-	-	-	6	5	-	-	-	-	3	-	-	34	-	-	-	-	-
40	Wainwright Subsistence Area	-	-	-	-	-	-	-	-	-	2	4	4	-	-	-	-	-	-	10	-	-	31	-	4
41	Barrow Subsistence Area 1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	3
42	Barrow Subsistence Area 2	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
45	ERA 45	-	-	-	-	-	-	-	-	9	1	-	-	-	24	-	9	-	-	-	-	-	-	-	-
46	Herald Shoal Polynya	2	-	-	10	1	-	-	-	1	-	-	-	-	-	10	1	-	-	-	-	-	-	-	-
47	Ice/Sea Segment 10	4	-	-	13	19	2	-	-	-	2	2	-	-	-	6	-	3	15	1	-	-	-	-	-
48	Ice/Sea Segment 11	1	4	4	-	8	36	3	-	-	2	12	4	-	-	-	-	4	11	3	16	47	1	1	1
49	Hanna's Shoal Polynya	1	7	40	-	2	12	10	2	-	-	1	-	1	-	-	-	2	1	-	25	4	-	5	-
50	Ice/Sea Segment 12	-	-	-	-	-	3	1	-	-	-	5	25	3	-	-	-	-	-	-	1	35	4	-	6
51	Ice/Sea Segment 13	-	-	-	-	-	-	-	-	-	-	-	16	14	-	-	-	-	-	-	-	1	5	1	38
52	Ice/Sea Segment 14	-	-	-	-	-	-	1	14	-	-	-	-	23	-	-	-	-	-	-	-	-	-	2	3
56	ERA 56	-	1	2	-	1	10	8	-	-	-	3	17	4	-	-	-	1	1	-	6	21	5	3	5
64	Peard Bay	-	-	-	-	-	-	-	-	-	-	-	1	4	-	-	-	-	-	-	-	-	1	-	18
70	ERA 70	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
99	ERA 99	-	-	-	3	10	2	-	-	-	25	32	2	-	-	3	3	-	18	34	-	2	3	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-3 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 30 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	Land	1	1	-	4	3	1	1	4	11	15	11	9	11	19	4	16	1	3	27	-	3	19	3	18
1	Kasegaluk Lagoon	-	-	-	1	2	-	-	-	1	6	7	1	-	-	1	3	-	2	16	-	1	3	-	-
2	Pt. Barrow, Plover Islands	-	-	-	-	-	-	-	2	-	-	-	-	3	-	-	-	-	-	-	-	-	-	1	1
3	ERA 3	-	-	-	1	-	-	-	-	3	1	-	-	-	3	-	2	-	-	-	-	-	-	-	-
4	ERA 4	-	-	-	-	-	-	-	-	4	-	-	-	-	6	-	1	-	-	-	-	-	-	-	-
6	ERA 6	-	-	-	-	2	2	2	4	-	1	6	15	15	-	-	-	-	3	2	-	5	32	4	36
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	3	3	1	-	-	5	19	11	1	-	5	2	22	-	3	37	-	1	2	-	-
11	Wrangel Island 12nmi Buffer	2	1	-	1		-	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-
14	ERA 14	-	-	-	1	-	-	-	-	8	2	-	-	-	24	-	5	-	-	1	-	-	-	-	-
15	ERA 15	-	-	-	1	1	-	-	-	10	8	1	-	-	30	1	20	-	1	3	-	-	-	-	-
16	ERA 16	-	-	-	-	-	-	-	-	3		-	-	-	3	-	1	-	-	-	-	-	-	-	-
18	ERA 18	1	-	-	7	3	-	-	-	17	8	2	-	-	16	5	10	1	2	3	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	10	-	2	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	4	1	-	-	1	-	9	-	-	3	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	1	-	-	-	-	4	4	-	-	-	-	2	-	1	13	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	1	-	-	-	-	1	5	5	-	-	-	-	-	1	3	-	1	20	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	1	-	12
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Spring Lead 7	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
29	Ice/Sea Segment 1	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1
30	Ice/Sea Segment 2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
35	ERA 35	1	1	1	-	2	4	5	5	-	-	7	23	19	-	-	-	1	2	1	2	13	22	6	23
36	ERA 36	2	1	1	6	9	3	1	-	2	15	19	5	1	1	6	5	2	13	20	1	5	7	-	1
38	Pt. Hope Subsistence Area	-	-	-	1	-	-	-	-	4	2	-	-	-	17	-	6	-	-	1	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	2	2	-	-	-	1	15	9	1	-	1	2	10	-	2	40	-	1	2	-	-
40	Wainwright Subsistence Area	-	-	-	1	3	1	-	-	-	7	11	13	2	-	1	3	-	4	17	-	4	45	-	8
41	Barrow Subsistence Area 1	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	5
42	Barrow Subsistence Area 2	-	-	-	-	-	-	-	3	-	-	-	-	3	-	-	-	-	-	-	-	-	-	1	1
45	ERA 45	-	-	-	1	1	-	-	-	14	5	1	-	-	30	1	14	-	-	3	-	-	-	-	-
46	Herald Shoal Polynya	7	1	-	18	4	1	-	-	4	3	1	-	-	1	19	4	2	3	1	-	1	-	-	-
47	Ice/Sea Segment 10	7	2	1	18	26	4	1	-	1	6	6	2	-	-	11	2	6	22	5	1	3	2	-	-
48	Ice/Sea Segment 11	5	11	10	3	19	44	10	2	-	9	26	12	4	-	3	2	11	24	13	23	58	5	6	4
49	Hanna's Shoal Polynya	5	17	51	1	9	27	26	12	-	3	8	6	9	-	1	1	10	9	4	39	17	1	20	6
50	Ice/Sea Segment 12	1	1	1	-	3	8	5	1	-	1	10	34	9	-	-	-	2	3	2	4	41	12	3	16
51	Ice/Sea Segment 13	-	-	-	-	-	1	3	1	-	-	2	24	18	-	-	-	-	1	-	1	5	17	3	45
52	Ice/Sea Segment 14	-	-	-	-	-	-	2	20	-	-	-	2	28	-	-	-	-	-	-	-	-	1	5	7
53	Ice/Sea Segment 15	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
56	ERA 56	2	4	6	-	2	14	13	3	-	-	6	21	8	-	-	-	3	2	1	10	24	9	8	10
59	ERA 59	-	-	-	1	-	-	-	-	2	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	3	-	-	-	-	4	-	1	-	-	-	-	-	-	-	-
63	ERA 63	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
64	Peard Bay	-	-	-	-	-	-	1	2	-	-	1	4	8	-	-	-	-	-	-	-	2	2	3	21
66	ERA 66	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
70	ERA 70	3	4	2	-	1	1	-	-	-	-	-	-	-	-	-	-	3	-	-	2	1	-	-	-
99	ERA 99	2	1	1	9	18	6	1	-	2	29	37	7	1	1	9	8	3	26	39	2	8	9	-	1

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-4 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 60 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	2	1	1	7	7	3	4	9	15	22	17	16	17	23	7	22	2	7	33	1	7	27	6	24
1	Kasegaluk Lagoon	-	-	-	2	3	1	-	-	1	9	9	3	-	1	2	4	-	3	19	-	2	4	-	-
2	Point Barrow Plover Islands	-	-	-	-	-	-	1	4	-	-	-	-	4	-	-	-	-	-	-	-	-	-	1	1
3	ERA 3	-	-	-	1	-	-	-	-	3	1	-	-	-	3	-	2	-	-	-	-	-	-	-	-
4	ERA 4	-	-	-	-	-	-	-	-	4	1	-	-	-	6	-	1	-	-	-	-	-	-	-	-
6	ERA 6	1	1	1	1	4	4	6	8	-	2	10	21	20	-	1	-	1	5	4	2	9	39	8	41
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	4	5	1	-	-	6	23	13	2	-	5	4	25	-	5	39	-	2	3	-	-
11	Wrangel Island 12nmi Buffer	3	1	-	1	1	-	-	-	-	-	-	-	-	-	2	-	2	1	-	-	-	-	-	-
14	ERA 14	-	-	-	1	-	-	-	-	8	3	-	-	-	24	1	6	-	-	1	-	-	-	-	-
15	ERA 15	-	-	-	2	1	-	-	-	11	10	2	-	-	30	1	22	-	1	4	-	-	-	-	-
16	ERA 16	-	-	-	-	-	-	-	-	4	1	-	-	-	4	-	1	-	-	-	-	-	-	-	-
18	ERA 18	1	-	-	7	3	-	-	-	18	8	2	-	-	16	5	11	1	2	3	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	10	-	2	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	1	-	-	-	1	5	2	-	-	1	-	9	-	1	4	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	1	1	-	-	-	1	5	4	-	-	-	1	3	-	2	14	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	1	2	1	-	-	-	3	7	7	-	-	1	1	-	3	5	-	3	23	-	1
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	3	3	-	-	-	-	-	-	-	1	3	-	13
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Spring Lead 7	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1
29	Ice/Sea Segment 1	-	-	-	-	-	-	1	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	1
30	Ice/Sea Segment 2	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
31	Ice/Sea Segment 3	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	ERA 35	1	2	3	1	3	7	8	8	-	1	9	25	21	-	1	-	2	4	2	4	16	24	10	25
36	ERA 36	2	2	1	7	11	4	2	-	2	16	21	7	1	1	7	5	3	15	21	2	7	9	1	2
38	Pt. Hope Subsistence Area	-	-	-	1	-	-	-	-	5	3	1	-	-	18	-	7	-	-	2	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	3	4	1	-	-	2	19	12	2	-	1	3	13	-	4	43	-	2	3	-	-
40	Wainwright Subsistence Area	-	-	-	3	6	3	1	1	1	10	16	19	4	-	3	5	1	7	22	1	8	53	1	11
41	Barrow Subsistence Area 1	-	-	-	-	-	-	-	1	-	-	-	1	3	-	-	-	-	-	-	-	-	1	-	6
42	Barrow Subsistence Area 2	-	-	-	-	-	-	1	5	-	-	-	-	4	-	-	-	-	-	-	-	-	-	1	2
45	ERA 45	-	-	-	1	1	-	-	-	15	7	2	-	-	31	1	16	-	1	4	-	-	-	-	-
46	Herald Shoal Polynya	7	2	-	19	5	1	-	-	4	3	2	-	-	1	21	5	3	4	2	-	1	1	-	-
47	Ice/Sea Segment 10	8	4	1	19	28	6	1	-	1	8	9	3	1	1	12	3	8	24	7	2	4	3	1	1
48	Ice/Sea Segment 11	7	14	14	7	25	48	16	6	1	14	34	19	10	1	6	6	14	30	19	27	63	10	12	10
49	Hanna's Shoal Polynya	9	23	56	4	15	34	36	21	1	7	16	15	18	-	3	2	15	15	10	46	26	5	31	15
50	Ice/Sea Segment 12	2	4	4	1	5	11	9	3	-	3	14	39	13	-	1	1	4	7	4	7	45	20	7	21
51	Ice/Sea Segment 13	1	1	2	-	2	4	6	3	-	1	4	31	21	-	-	-	1	2	1	3	9	28	6	49
52	Ice/Sea Segment 14	-	-	1	-	-	1	4	22	-	-	-	4	29	-	-	-	-	-	-	1	1	2	7	9
53	Ice/Sea Segment 15	-	-	-	-	-	-	1	3	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	-
54	Ice/Sea Segment 16a	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
56	ERA 56	3	6	9	1	4	17	17	6	-	1	8	23	11	-	1	-	5	4	2	13	27	11	12	13
59	ERA 59	-	-	-	1	-	-	-	-	2	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	3	1	-	-	-	5	-	1	-	-	-	-	-	-	-	-
63	ERA 63	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
64	Peard Bay	-	1	1	-	1	2	3	4	-	-	2	7	10	-	-	-	1	1	-	1	4	4	5	24
66	ERA 66	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
70	ERA 70	4	5	3	-	1	2	1	1	-	-	-	-	-	-	-	-	4	1	-	3	1	-	1	-
99	ERA 99	3	3	1	13	22	9	2	-	3	32	41	10	2	1	11	10	4	30	41	3	12	13	1	2

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-5 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 180 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	5	4	4	14	13	7	9	15	27	30	24	27	25	37	13	31	5	13	41	5	13	41	12	35
1	Kasegaluk Lagoon	-	-	-	4	5	1	-	-	1	12	11	3	-	1	4	7	-	5	22	-	2	5	-	-
2	Point Barrow, Plover Islands	1	1	2	-	-	1	3	7	-	-	-	2	6	-	-	-	1	-	-	1	1	2	3	3
3	ERA 3	-	-	-	1	-	-	-	-	3	1	-	-	-	3	-	2	-	-	-	-	-	-	-	-
4	ERA 4	-	-	-	-	-	-	-	-	4	1	-	-	-	6	-	1	-	-	-	-	-	-	-	-
6	ERA 6	1	2	3	3	8	7	10	12	-	5	15	29	25	-	2	2	3	10	9	4	13	46	13	47
10	Ledyard Bay Spectacled Eider Critical Habitat	1	-	-	6	7	2	-	-	6	25	15	3	-	6	5	27	1	8	41	1	3	4	-	-
11	Wrangel Island 12 nmi Buffer	3	1	1	1	1	1	-	-	-	-	-	-	-	-	2	-	2	1	-	1	-	-	-	-
14	ERA 14	-	-	-	1	-	-	-	-	8	3	-	-	-	25	1	7	-	-	2	-	-	-	-	-
15	ERA 15	-	-	-	2	2	-	-	-	11	11	2	1	-	32	1	23	-	2	5	-	-	1	-	-
16	ERA 16	-	-	-	1	-	-	-	-	8	1	-	-	-	8	1	3	-	-	-	-	-	-	-	-
18	ERA 18	1	-	-	7	3	-	-	-	18	8	2	-	-	16	5	11	1	2	3	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	11	-	2	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	1	-	-	-	1	6	2	1	-	1	-	10	-	1	5	-	1	1	-	-
21	Chukchi Spring Lead 3	-	-	-	2	2	-	-	-	1	6	5	1	-	1	2	4	-	3	15	-	1	1	-	-
22	Chukchi Spring Lead 4	-	-	-	2	4	1	-	-	-	4	8	9	1	-	2	2	1	4	7	-	4	26	-	2
23	Chukchi Spring Lead 5	-	-	-	-	-	1	1	1	-	-	1	4	4	-	-	-	-	-	1	-	1	6	1	16
24	Beaufort Spring Lead 6	-	-	-	-	-	-	1	2	-	-	-	1	3	-	-	-	-	-	-	-	-	1	1	2
25	Beaufort Spring Lead 7	-	-	-	-	-	-	1	2	-	-	-	1	3	-	-	-	-	-	-	-	-	1	1	2
26	Beaufort Spring Lead 8	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	Beaufort Spring Lead 9	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Ice/Sea Segment 1	-	-	-	-	-	1	1	3	-	-	-	1	2	-	-	-	-	-	-	-	-	-	2	1
30	Ice/Sea Segment 2	-	-	1	-	-	1	2	2	-	-	-	-	1	-	-	-	-	-	-	1	1	-	2	-
31	Ice/Sea Segment 3	-	-	1	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	-
32	Ice/Sea Segment 4	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
35	ERA 35	3	5	6	2	7	11	13	12	-	2	12	29	25	-	2	-	5	8	3	7	20	28	14	29
36	ERA 36	3	3	2	8	13	6	2	1	2	17	23	9	2	1	7	5	4	18	22	3	9	12	1	3
38	Pt. Hope Subsistence Area	-	-	-	1	1	-	-	-	5	3	1	-	-	18	1	8	-	1	2	-	-	-	-	-
39	Point Lay Subsistence Area	1	-	-	5	6	1	-	-	2	22	14	3	-	1	5	16	1	6	45	-	2	4	-	-
40	Wainwright Subsistence Area	1	1	1	6	10	4	2	2	1	15	21	24	6	1	5	8	2	11	27	1	10	58	2	14
41	Barrow Subsistence Area 1	-	-	-	-	-	-	-	1	-	-	-	2	4	-	-	-	-	-	-	-	-	2	1	9
42	Barrow Subsistence Area 2	1	1	2	-	1	1	3	7	-	-	-	2	6	-	-	-	1	-	-	1	1	1	3	3
45	ERA 45	-	-	-	2	1	-	-	-	15	7	2	-	-	32	1	16	-	1	4	-	-	1	-	-
46	Herald Shoal Polynya	7	2	-	20	5	1	-	-	4	4	2	-	-	1	21	5	3	5	3	-	1	1	-	-
47	Ice/Sea Segment 10	9	5	2	20	29	7	2	-	1	10	11	5	1	1	12	4	9	26	9	4	7	6	1	2
48	Ice/Sea Segment 11	10	18	19	9	29	52	23	11	2	18	38	28	17	1	7	8	18	34	24	31	67	19	19	18
49	Hanna's Shoal Polynya	12	29	60	6	21	41	44	31	1	12	24	27	29	1	5	6	21	21	16	51	35	16	39	25
50	Ice/Sea Segment 12	4	7	6	2	9	15	12	5	-	5	18	44	16	-	2	2	7	11	8	10	47	27	10	25
51	Ice/Sea Segment 13	2	3	3	1	5	7	9	7	-	3	9	37	24	-	1	1	3	6	4	5	14	37	10	52
52	Ice/Sea Segment 14	1	3	4	-	1	4	8	24	-	-	2	6	31	-	-	-	2	1	-	4	4	4	10	11
53	Ice/Sea Segment 15	-	1	1	-	-	2	2	4	-	-	-	1	2	-	-	-	-	-	-	2	1	1	2	1
54	Ice/Sea Segment 16a	-	1	2	-	-	2	2	3	-	-	-	1	2	-	-	-	-	-	-	2	1	-	2	1
55	Ice/Sea Segment 17	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	ERA 56	6	11	15	2	7	23	23	11	-	2	10	27	16	-	2	-	9	7	3	19	32	15	18	18
59	ERA 59	-	-	-	2	-	-	-	-	3	1	-	-	-	2	1	1	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	3	1	-	-	-	6	-	1	-	-	-	-	-	-	-	-
63	ERA 63	2	2	1	-	-	1	1	1	-	-	-	-	-	-	-	-	2	-	-	1	-	-	1	-
64	Peard Bay	1	1	2	-	2	4	7	6	-	1	4	12	14	-	-	-	2	3	1	3	6	7	8	31
66	ERA 66	-	-	-	-	-	-	-	3	-	-	-	-	2	-	-	-	-	-	-	-	-	1	1	1
69	Colville/Harrison Bay	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	ERA 70	4	6	4	-	2	3	2	2	-	1	2	1	2	-	-	-	5	2	1	4	2	1	2	1
99	ERA 99	5	5	3	15	27	12	4	2	4	35	45	16	3	2	13	12	7	34	44	5	16	20	3	6

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-6 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 360 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	7	5	6	17	15	10	12	22	33	33	27	29	29	42	16	36	6	15	43	6	15	44	15	39
1	Kasegaluk Lagoon	-	-	-	4	5	1	-	-	1	12	11	3	-	1	4	7	-	5	22	-	2	5	-	-
2	Point Barrow, Plover Islands	1	2	3	1	1	3	5	9	-	1	1	2	7	-	1	-	2	1	1	3	3	2	5	3
3	ERA 3	-	-	-	1	-	-	-	-	3	1	-	-	-	3	-	2	-	-	-	-	-	-	-	-
4	ERA 4	-	-	-	-	-	-	-	-	4	1	-	-	-	6	-	1	-	-	-	-	-	-	-	-
6	ERA 6	2	3	4	3	8	8	12	14	-	6	15	29	26	-	2	2	3	10	9	5	14	46	14	47
10	Ledyard Bay Spectacled Eider Critical Habitat	1	-	-	6	7	2	-	-	6	25	15	3	-	6	5	27	1	8	41	1	3	4	-	-
11	Wrangel Island	3	1	1	1	1	1	-	-	-	-	-	-	-	-	2	-	2	1	-	1	-	-	-	-
14	ERA 14	-	-	-	1	-	-	-	-	8	3	-	-	-	25	1	7	-	-	2	-	-	-	-	-
15	ERA 15	-	-	-	2	2	-	-	-	11	11	2	1	-	32	1	23	-	2	5	-	-	1	-	-
16	ERA 16	-	-	-	1	-	-	-	-	10	2	-	-	-	10	1	4	-	-	-	-	-	-	-	-
18	ERA 18	1	-	-	7	3	-	-	-	18	8	2	-	-	16	5	11	1	2	3	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	11	-	2	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	1	-	-	-	1	6	2	1	-	1	-	10	-	1	5	-	1	1	-	-
21	Chukchi Spring Lead 3	-	-	-	2	2	-	-	-	1	6	5	1	-	1	2	4	-	3	15	-	1	1	-	-
22	Chukchi Spring Lead 4	-	-	-	2	4	1	-	-	-	4	9	10	1	-	2	2	1	4	7	-	4	26	-	2
23	Chukchi Spring Lead 5	-	-	-	-	-	1	1	1	-	-	1	4	4	-	-	-	-	-	1	-	1	6	1	16
24	Beaufort Spring Lead 6	-	-	1	-	-	1	2	4	-	-	1	2	4	-	-	-	-	-	-	1	1	1	2	2
25	Beaufort Spring Lead 7	-	1	2	-	1	2	3	4	-	-	1	2	4	-	-	-	1	1	-	2	2	1	3	2
26	Beaufort Spring Lead 8	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
27	Beaufort Spring Lead 9	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
29	Ice/Sea Segment 1	-	-	1	-	-	1	2	3	-	-	-	1	3	-	-	-	-	-	-	1	1	-	2	1
30	Ice/Sea Segment 2	-	1	1	-	-	1	2	2	-	-	-	-	1	-	-	-	-	-	-	1	1	-	2	-
31	Ice/Sea Segment 3	-	1	1	-	-	1	2	2	-	-	-	-	1	-	-	-	-	-	-	1	1	-	1	-
32	Ice/Sea Segment 4	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
35	ERA 35	3	5	6	2	7	11	13	12	-	2	13	30	25	-	2	1	5	8	4	8	20	29	15	30
36	ERA 36	3	3	2	8	13	6	2	1	2	17	23	9	2	1	8	6	4	18	22	3	9	12	1	4
38	Pt. Hope Subsistence Area	-	-	-	1	1	-	-	-	5	3	1	-	-	18	1	8	-	1	2	-	-	-	-	-
39	Point Lay Subsistence Area	1	-	-	5	6	1	-	-	2	22	14	3	-	1	5	16	1	6	45	-	2	4	-	-
40	Wainwright Subsistence Area	1	1	1	6	10	4	2	2	1	15	21	24	6	1	5	8	2	11	27	2	10	58	2	14
41	Barrow Subsistence Area 1	-	-	-	-	-	-	1	1	-	-	-	2	4	-	-	-	-	-	1	-	-	2	1	9
42	Barrow Subsistence Area 2	1	2	3	1	2	2	4	8	-	1	1	2	6	-	1	-	2	2	1	2	2	2	4	3
45	ERA 45	-	-	-	2	1	-	-	-	15	7	2	-	-	32	1	16	-	1	4	-	-	1	-	-
46	Herald Shoal Polynya	7	2	-	20	5	1	-	-	4	4	2	-	-	1	21	5	3	5	3	-	1	1	-	-
47	Ice/Sea Segment 10	9	5	2	20	29	7	2	-	1	10	11	5	1	1	12	4	9	26	9	4	7	6	1	2
48	Ice/Sea Segment 11	10	19	19	9	29	52	23	12	2	18	38	29	18	1	7	8	19	34	24	32	67	20	20	19
49	Hanna's Shoal Polynya	13	29	61	6	21	42	45	31	1	13	24	28	30	1	5	6	22	22	16	52	36	17	40	27
50	Ice/Sea Segment 12	4	7	7	2	10	15	13	6	-	6	18	44	16	-	2	2	7	11	8	10	48	27	11	26
51	Ice/Sea Segment 13	2	3	4	1	5	7	9	7	-	3	9	37	25	-	1	1	3	6	5	5	14	37	10	52
52	Ice/Sea Segment 14	2	3	5	1	2	5	8	25	-	1	3	7	32	-	1	-	2	2	1	5	5	4	11	11
53	Ice/Sea Segment 15	-	1	2	-	1	2	3	5	-	-	1	1	3	-	-	-	1	1	1	2	2	1	3	1
54	Ice/Sea Segment 16a	-	1	2	-	1	2	3	4	-	-	1	1	3	-	-	-	1	1	-	2	2	-	3	1
55	Ice/Sea Segment 17	-	-	1	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-
56	ERA 56	6	11	16	2	8	23	24	12	-	3	11	29	18	-	2	1	9	8	4	20	32	16	19	19
58	Ice/Sea Segment 20a	-	-	-	-	-	-	1	3	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	-
59	ERA 59	-	-	-	2	-	-	-	-	3	1	-	-	-	2	1	2	-	-	-	-	-	-	-	-
60	Ice/Sea Segment 22	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	3	1	-	-	-	6	-	1	-	-	-	-	-	-	-	-
62	Ice/Sea Segment 24a	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	ERA 63	2	2	1	-	1	1	1	1	-	-	1	1	1	-	-	-	2	1	-	1	1	1	1	1
64	Peard Bay	1	2	3	1	3	4	8	7	-	1	4	12	15	-	1	-	2	3	2	3	7	8	9	31
65	Smith Bay	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
66	ERA 66	1	2	3	-	1	2	3	4	-	-	1	1	2	-	-	-	1	1	1	2	2	1	3	1
69	Harrison Bay/Colville Delta	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
70	ERA 70	4	6	4	-	2	3	2	2	-	1	2	2	2	-	-	-	5	2	1	4	3	1	2	2
83	Kaktovik ERA	-	-	-	-	-	-	1	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
99	ERA 99	5	5	3	15	27	12	4	2	4	35	45	16	4	2	13	12	7	34	44	5	16	21	3	6

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-7 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 3 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
79	Point Belcher, Wainwright	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-8 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 10 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
66	Ayugatak Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	4	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	6	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	3	-	-	-	-	-
75	Akeonik, Icy Cape	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
79	Point Belcher, Wainwright	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	4	-	-
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	-	-
81	Peard Bay, Point Franklin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
83	Nulavik, Loran Radio Station	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-9 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 30 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
27	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
37	Chegitun, Utkan, Mys Volnistyy	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	-	-	-	-		1	-	-	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	1	-	-	-	-	5	-	1	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	1	1	-	-	-	4	-	2	-	-	-	-	-	-	-	-
66	Ayugatak Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	2	-	-	2	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	2	-	-	5	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	2	-	-	8	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	1	-	1	5	-	-	-	-	-
75	Akeonik, Icy Cape	-	-	-	-	1	-	-	-	-	1	2	-	-	-	-	1	-	1	3	-	-	-	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-
77	Nivat Point, Nokotlek Point,	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	1	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	4	-	-
79	Point Belcher, Wainwright	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	1	7	-	-
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	1	4	-	1
81	Peard Bay, Point Franklin	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	2
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	5
83	Nulavik, Loran Radio Station	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	3
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	-	1	-	-	-	1	3	-	-	-	-	-	-	-	-	-	1	4
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	1	2	-	-	-	-	5	-	-	-	-	-	-	-	-	-	1	3
86	Dease Inlet, Plover Islands	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-10 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 60 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
8	E. Wrangel Island, Skeletov	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
27	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
32	Mys Dzhenretlen, Eynenekvyk	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
33	Neskan, Laguna Neskan	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
37	Chegitun, Utkan	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	1	1	-	-	-	5	-	1	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	1	1	-	-	-	5	-	2	-	-	1	-	-	-	-	-
66	Ayugatak Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
67	Cape Sabine, Pitmegea River	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
68	Agiak Lagoon, Punuk Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
69	Cape Beaufort, Omalik Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	2	-	-	2	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	3	-	-	6	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	1	-	-	-	-	4	2	-	-	-	1	2	-	-	8	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	1	1	-	-	-	-	3	3	-	-	-	1	2	-	1	7	-	-	1	-	-
75	Akeonik, Icy Cape	-	-	-	1	1	-	-	-	-	2	3	-	-	-	1	1	-	1	4	-	-	1	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	1	-	-
77	Nivat Point, Nokotlek Point,	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	-	-	1	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	1	1	-	-	6	-	-
79	Point Belcher, Wainwright,	-	-	-	-	-	1	-	-	-	-	1	4	1	-	-	-	-	1	-	-	1	9	-	1
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	-	-	-	-	-	-	1	3	1	-	-	-	-	1	-	-	2	5	-	2
81	Peard Bay, Point Franklin	-	-	-	-	-	-	-	-	-	-	1	2	1	-	-	-	-	1	-	-	1	2	-	2
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	1	-	7
83	Nulavik, Loran Radio Station	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	1	-	1	3
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	1	1	-	-	-	1	4	-	-	-	-	-	-	-	-	-	1	5
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	1	4	-	-	-	1	6	-	-	-	-	-	-	-	-	-	3	4
86	Dease Inlet, Plover Islands	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
87	Igalik & Kulgurak Island,	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-11 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 180 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
8	E. Wrangel Island, Skeletov	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-
27	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
28	Vankarem,Vankarem Laguna	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
30	Nutepynmin, Pyngopil'gyn	-	-	-	1	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
31	Alyatki, Zaliv Tasytkhin	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
32	Mys Dzhenretlen, Eynenekvyk	-	-	-	1	-	-	-	-	2	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
33	Neskan, Laguna Neskan	-	-	-	-	-	-	-	-	2	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	4	1	-	-	-	4	-	1	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	3	-	-	-	-	4	-	1	-	-	-	-	-	-	-	-
37	Chegitun, Utkan	-	-	-	-	-	-	-	-	2	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	1	1	-	-	-	5	-	1	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	1	1	-	-	-	5	-	3	-	-	1	-	-	-	-	-
66	Ayugatak Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
67	Cape Sabine, Pitmegea River	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
68	Agiak Lagoon, Punuk Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
69	Cape Beaufort, Omalik Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	1	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	3	-	-	2	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	1	1	-	-	-	-	4	1	-	-	-	1	3	-	-	6	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	1	1	-	-	-	-	4	2	-	-	-	1	3	-	1	9	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	1	2	-	-	-	-	4	3	1	-	-	1	2	-	2	7	-	1	1	-	-
75	Akeonik, Icy Cape	-	-	-	1	2	-	-	-	-	3	3	1	-	-	1	1	-	2	5	-	-	1	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	1	1	-	-	1	-	-
77	Nivat Point, Nokotlek Point,	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	1	-	-	1	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	1	-	-	-	-	1	2	3	-	-	-	-	-	1	1	-	1	8	-	1
79	Point Belcher, Wainwright,	-	-	-	-	1	1	-	-	-	1	2	4	1	-	-	-	-	1	1	-	2	11	-	2
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	1	1	-	-	-	-	1	5	2	-	-	-	-	1	1	-	2	8	-	4
81	Peard Bay, Point Franklin	-	-	-	-	1	1	-	-	-	-	1	3	1	-	-	-	-	1	1	-	1	3	-	3
82	Skull Cliff	-	-	-	-	-	1	-	-	-	-	1	3	2	-	-	-	-	-	-	-	1	3	1	8
83	Nulavik, Loran Radio Station	-	-	-	-	1	1	1	1	-	-	1	2	2	-	-	-	-	1	-	1	1	1	1	5
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	2	2	-	-	-	2	5	-	-	-	-	-	-	-	1	1	2	6
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	3	6	-	-	-	3	9	-	-	-	-	-	-	-	1	2	5	6
86	Dease Inlet, Plover Islands	-	-	-	-	-	-	1	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	1
87	Igalik & Kulgurak Island,	1	1	1	-	-	1	1	1	-	-	-	-	1	-	-	-	1	-	-	1	-	-	1	-
88	Cape Simpson, Piasuk River	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-12 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 360 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
8	E. Wrangel Island, Skeletov	1	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-
25	Ostrov Leny, Yulinu	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
26	Ekugvaam, Kepin, Pil'khin	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
27	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
28	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
29	Vankarem,Vankarem Laguna	-	-	-	1	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
30	Nutepynmin, Pyngopil'gyn	-	-	-	1	-	-	-	-	1	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-
31	Alyatki, Zaliv Tasytkhin	-	-	-	1	-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
32	Mys Dzhenretlen, Eynenekvyk	-	-	-	1	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
33	Neskan, Laguna Neskan	-	-	-	1	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	3	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	4	1	-	-	-	5	-	2	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	3	-	-	-	-	4	-	1	-	-	-	-	-	-	-	-
37	Chegitun, Utkan	-	-	-	-	-	-	-	-	2	-	-	-	-	4	-	1	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	1	1	-	-	-	5	-	1	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	1	1	-	-	-	5	-	3	-	-	1	-	-	-	-	-
66	Ayugatak Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
67	Cape Sabine, Pitmegea River	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
68	Agiak Lagoon, Punuk Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
69	Cape Beaufort, Omalik Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	1	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	3	-	-	2	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	1	1	-	-	-	-	4	1	-	-	-	1	3	-	-	6	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	1	1	-	-	-	-	4	2	-	-	-	1	3	-	1	9	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	1	2	-	-	-	-	4	3	1	-	-	1	2	-	2	7	-	1	1	-	-
75	Akeonik, Icy Cape	-	-	-	1	2	-	-	-	-	3	3	1	-	-	1	1	-	2	5	-	-	1	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	1	1	-	-	1	-	-
77	Nivat Point, Nokotlek Point,	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	1	-	-	1	-	-
78	Point Collie, Sigeakruk Point	-	-	-	1	1	-	-	-	-	1	2	3	-	-	-	-	-	1	2	-	1	8	-	1
79	Point Belcher, Wainwright,	-	-	-	-	1	1	-	-	-	1	2	4	1	-	-	-	-	1	1	-	2	11	-	2
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	1	1	-	-	-	1	2	5	2	-	-	-	-	1	1	-	2	9	-	4
81	Peard Bay, Point Franklin	-	-	-	-	1	1	-	-	-	1	1	3	1	-	-	-	-	1	1	-	1	3	-	3
82	Skull Cliff	-	-	-	-	-	1	-	-	-	-	1	3	2	-	-	-	-	1	-	-	1	3	1	9
83	Nulavik, Loran Radio Station	-	-	-	-	1	1	1	1	-	-	1	2	2	-	-	-	-	1	-	1	2	1	1	5
84	Will Rogers & Wiley Post Mem.	-	-	1	-	-	1	3	3	-	-	-	2	5	-	-	-	-	-	-	1	1	1	3	6
85	Barrow, Browerville, Elson Lag.	-	-	1	-	-	1	3	7	-	-	-	3	10	-	-	-	-	-	-	1	1	2	5	6
86	Dease Inlet, Plover Islands	-	-	-	-	-	-	1	2	-	-	-	1	2	-	-	-	-	-	-	-	-	1	1	1
87	Igalik & Kulgurak Island	1	1	1	-	1	1	1	1	-	-	1	1	1	-	-	-	1	1	-	1	1	-	1	-
88	Cape Simpson, Piasuk River	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
91	Lonely, Pitt Point, Pogik Bay	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-13 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 3 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
96	United States Chukchi Coast	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1	-	-	6	-	-	2	-	3

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-14 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 10 Days, Chukchi Sale 193

ID	Land Segments Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	2	-	7
96	United States Chukchi Coast	-	-	-	-	-	-	-	-	1	4	3	2	2	6	-	4	-	-	17	-	-	7	-	9
97	United States Beaufort Coast	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-15 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 30 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	1	1	-	-	-	5	-	2	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	-	-	-	1	-	-	2	5	4	-	-	-	-	1	1	-	2	7	1	11
90	Kasegaluk Lagoon Special Use Area	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	-	-	1	-	-
95	Russia Chukchi Coast	1	-	-	2	1	-	-	-	7	1	-	-	-	8	2	2	1	-	-	-	-	-	-	-
96	United States Chukchi Coast	-	-	-	2	3	1	1	1	4	14	11	9	6	11	2	13	-	3	27	-	3	19	1	15
97	United States Beaufort Coast	-	-	-	-	-	-	1	3	-	-	-	-	6	-	-	-	-	-	-	-	-	-	1	3

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-16 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 60 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	1	1	-	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	2	1	-	-	-	5	-	3	-	-	1	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	1	2	1	3	-	1	4	8	6	-	-	-	-	2	2	1	4	10	2	15
90	Kasegaluk Lagoon Special Use Area	-	-	-	-	1	-	-	-	-	1	2	1	-	-	-	-	-	1	2	-	-	2	-	-
91	Teshekpuk Lake Special Use Area	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95	Russia Chukchi Coast	2	1	-	3	1	-	-	-	10	2	-	-	-	11	3	4	1	1	-	-	-	-	-	-
96	United States Chukchi Coast	-	-	1	3	6	3	2	2	5	20	16	15	9	12	3	18	1	7	33	1	7	27	3	20
97	United States Beaufort Coast	-	-	-	-	-	-	2	6	-	-	-	1	8	-	-	-	-	-	-	-	-	-	3	4

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-17 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 180 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	2	1	-	1	1	-	-	-	-	-	-	-	-	-	1	-	1	1	-	-	-	-	-	-
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	2	1	-	-	-	6	-	3	-	-	1	-	-	-	-	-
89	National Petroleum Reserve Alaska	1	2	2	1	4	4	4	6	-	2	7	13	9	-	1	1	2	5	4	3	7	17	4	21
90	Kasegaluk Lagoon Special Use Area	-	-	-	1	1	-	-	-	-	1	2	1	-	-	-	-	-	1	2	-	1	2	-	-
91	Teshekpuk Lake Special Use Area	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95	Russia Chukchi Coast	4	2	1	7	1	1	-	1	21	4	1	-	-	23	6	8	2	1	1	1	-	-	-	-
96	United States Chukchi Coast	1	1	1	7	11	6	4	5	6	26	23	23	13	14	7	23	2	12	40	3	12	39	5	28
97	United States Beaufort Coast	1	1	2	-	1	1	5	11	-	-	-	3	12	-	-	-	1	1	-	2	1	2	7	7

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-18 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 360 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	2	1	-	1	1	-	-	2	-	-	-	1	1	-	1	-	1	1	-	-	-	1	1	1
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	2	1	-	-	-	6	-	3	-	-	1	-	-	-	-	-
89	National Petroleum Reserve Alaska	2	3	3	2	5	5	5	8	-	4	8	15	11	-	2	2	3	6	5	4	9	19	6	23
90	Kasegaluk Lagoon Special Use Area	-	-	-	1	1	-	-	-	-	1	2	1	-	-	-	-	-	1	2	-	1	2	-	-
91	Teshekpuk Lake Special Use Area	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
95	Russia Chukchi Coast	4	2	1	9	2	1	1	3	27	5	1	1	2	28	9	12	3	1	1	1	1	1	1	1
96	United States Chukchi Coast	1	1	2	7	11	6	6	6	6	27	24	24	13	14	7	23	2	12	41	3	12	40	6	29
97	United States Beaufort Coast	1	2	3	1	2	3	6	14	-	1	2	5	14	-	1	1	2	2	1	3	3	4	9	9

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-19 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 3 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11

Notes- All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A.2-20 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 10 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11

Notes- All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A.2-21 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 30 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
16	Chukchi Sea	-	1	-	-	-	-	-	-	--		-	-	-	-	-	-	1	-	-	-	-	-	-	-
18	Chukchi Sea	1	2	3	-	1	2	1	-	-	-	1	-	-	-	-	-	1	1	-	3	1	-	1	-
19	Chukchi Sea	1	2	3	-	1	1	2	1	-	-	-	-	-	-	-	-	1	1	-	2	1	-	1	-
20	Chukchi Sea	-	1	2	-	-	1	1	1	-	-	-	-	-	-	-	-	1	-	-	1	-	-	1	-
24	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-22 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 60 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
15	Chukchi Sea	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
16	Chukchi Sea	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-
17	Chukchi Sea	1	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-
18	Chukchi Sea	3	6	8	1	4	6	5	3	-	2	3	2	2	-	1	-	5	4	2	7	5	1	5	2
19	Chukchi Sea	3	7	8	1	3	6	6	3	-	1	2	2	3	-	1	1	6	3	1	8	3	-	6	2
20	Chukchi Sea	2	4	5	-	2	3	4	4	-	1	1	1	2	-	-	-	3	2	1	4	2	-	4	1
21	Chukchi Sea	-	1	1	-	-	1	1	1	-	-	-	-	1	-	-	-	1	1	-	1	-	-	1	-
22	Chukchi Sea	-	-	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-
23	Beaufort Sea	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
24	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
25	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-23 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 180 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
15	Chukchi Sea	1	1	1	-	1	1	1	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	1	-
16	Chukchi Sea	2	2	1	-	1	1	1	-	-	-	1	1	-	-	-	-	2	1	-	1	1	-	1	1
17	Chukchi Sea	2	2	2	1	1	2	1	1	-	1	1	1	1	-	1	-	2	1	1	2	1	-	1	1
18	Chukchi Sea	5	9	11	2	6	9	9	6	-	4	7	6	5	-	2	1	7	7	5	10	9	3	8	5
19	Chukchi Sea	7	12	14	3	9	12	14	9	-	5	8	9	9	-	2	2	10	9	6	14	10	6	14	8
20	Chukchi Sea	5	9	11	1	7	10	9	8	-	3	5	6	7	-	1	1	8	7	4	10	8	4	9	7
21	Chukchi Sea	1	2	3	-	1	2	2	3	-	-	1	1	2	-	-	-	1	2	1	2	2	1	3	1
22	Chukchi Sea	-	-	1	-	-	1	1	2	-	-	1	1	1	-	-	-	-	-	1	1	1	1	2	1
23	Beaufort Sea	-	1	2	-	-	1	2	2	-	-	-	1	1	-	-	-	-	-	-	1	1	-	2	1
24	Beaufort Sea	-	-	-	-	-	-	1	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1
25	Beaufort Sea	-	-	-	-	-	1	-	1	-	-	1	1	1	-	-	-	-	-	-	1	1	1	-	1
26	Beaufort Sea	-	-	1	-	-	1	1	1	-	-	-	1	1	-	-	-	-	-	-	1	1	-	1	1
27	Beaufort Sea	-	-	1	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	1	-	-	1	-
28	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-24 Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 360 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
15	Chukchi Sea	1	1	1	-	1	1	1	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	1	-
16	Chukchi Sea	2	2	1	-	1	1	1	-	-	-	1	1	-	-	-	-	2	1	-	1	1	-	1	1
17	Chukchi Sea	2	2	2	1	1	2	1	1	-	1	1	1	1	-	1	-	2	1	1	2	1	1	1	1
18	Chukchi Sea	5	9	11	2	6	9	9	6	-	4	7	6	5	-	2	1	7	7	5	10	9	4	8	5
19	Chukchi Sea	7	13	14	3	9	13	15	9	-	5	8	10	10	-	2	2	11	9	6	14	11	6	14	9
20	Chukchi Sea	5	9	11	1	7	10	10	8	-	3	6	6	7	-	1	1	8	7	4	11	8	4	10	7
21	Chukchi Sea	1	2	3	-	1	2	3	3	-	1	1	2	2	-	-	-	1	2	1	3	2	1	3	1
22	Chukchi Sea	-	-	1	-	-	1	1	2	-	-	1	1	1	-	-	-	-	-	1	1	1	1	2	1
23	Beaufort Sea	1	1	3	-	1	2	2	3	-	1	1	1	2	-	-	-	1	1	1	2	1	1	2	2
24	Beaufort Sea	-	-	1	-	-	1	1	2	-	-	-	1	2	-	-	-	-	-	-	1	1	-	2	1
25	Beaufort Sea	-	-	-	-	-	1	-	1	-	-	1	1	1	-	-	-	-	-	-	1	1	1	-	1
26	Beaufort Sea	-	1	1	-	-	1	2	2	-	-	-	1	2	-	-	-	-	-	-	1	1	-	2	2
27	Beaufort Sea	-	-	1	-	-	1	1	2	-	-	-	1	1	-	-	-	-	-	-	1	1	-	1	1
28	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
34	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-25 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 3 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	-	-	-	-	-	-	-	-	-	-	-	-	1	6	-	1	-	-	7	-	-	3	-	7
1	Kasegaluk Lagoon	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	9	-	-	-	-	-
6	ERA 6	-	-	-	-	-	-	-	-	-	-	-	4	6	-	-	-	-	-	-	-	-	26	-	46
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	-	-	-	-	-	-	12	8	-	-	-	-	24	-	-	62	-	-	-	-	-
14	ERA 14	-	-	-	-	-	-	-	-	5	-	-	-	-	36	-	1	-	-	-	-	-	-	-	-
15	ERA 15	-	-	-	-	-	-	-	-	7	3	-	-	-	49	-	28	-	-	-	-	-	-	-	-
18	ERA 18	-	-	-	-	-	-	-	-	3	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	4	-	-	1	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	12	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	9
35	ERA 35	-	-	-	-	-	-	-	-	-	-	6	38	30	-	-	-	-	-	-	-	14	40	1	42
36	ERA 36	-	-	-	1	6	1	-	-	-	25	34	-	-	-	1	1	-	14	35	-	-	1	-	-
38	Pt. Hope Subsistence Area	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	2	-	-	-	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	27	-	-	-	-	-
40	Wainwright Subsistence Area	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	4	-	-	26	-	3
42	Barrow Subsistence Area 2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
45	ERA 45	-	-	-	-	-	-	-	-	5	-	-	-	-	25	-	9	-	-	-	-	-	-	-	-
46	Herald Shoal Polynya	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	Ice/Sea Segment 10	2	-	-	11	14	-	-	-	-	-	-	-	-	-	4	-	1	10	-	-	-	-	-	-
48	Ice/Sea Segment 11	-	-	-	-	1	24	1	-	-	-	1	-	-	-	-	-	-	-	-	12	37	-	-	-
49	Hanna's Shoal Polynya	-	1	15	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-
50	Ice/Sea Segment 12	-	-	-	-	-	1	-	-	-	-	3	16	-	-	-	-	-	-	-	-	28	1	-	-
51	Ice/Sea Segment 13	-	-	-	-	-	-	-	-	-	-	-	10	10	-	-	-	-	-	-	-	-	-	-	22
52	Ice/Sea Segment 14	-	-	-	-	-	-	-	9	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-
56	ERA 56	-	-	1	-	-	18	12	-	-	-	3	34	2	-	-	-	-	-	-	8	42	4	1	3
64	Peard Bay	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	36
70	ERA 70	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
99	ERA 99	-	-	-	1	10	1	-	-	-	41	56	1	-	-	1	1	-	24	57	-	-	1	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-26 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 10 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	-	-	-	-	-	-	-	1	3	5	5	5	8	12	-	6	-	-	20	-	-	13	1	18
1	Kasegaluk Lagoon	-	-	-	-	-	-	-	-	-	4	5	1	-	-	-	1	-	-	21	-	-	2	-	-
2	Point Barrow, Plover Islands	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
3	ERA 3	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
6	ERA 6	-	-	-	-	-	-	-	2	-	-	3	13	17	-	-	-	-	-	1	-	1	39	1	54
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	1	1	-	-	-	3	24	14	-	-	4	1	32	-	1	67	-	-	1	-	-
14	ERA 14	-	-	-	-	-	-	-	-	11	1	-	-	-	42	-	5	-	-	-	-	-	-	-	-
15	ERA 15	-	-	-	1	-	-	-	-	14	9	1	-	-	54	-	34	-	-	3	-	-	-	-	-
18	ERA 18	-	-	-	3	-	-	-	-	20	3	-	-	-	17	1	5	-	-	-	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	7	-	1	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	5	-	-	2	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	9	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	1	-	-	13	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	10
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Spring Lead 7	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
29	Ice/Sea Segment 1	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
35	ERA 35	-	-	-	-	1	2	2	4	-	-	12	45	37	-	-	-	-	2	1	-	21	46	5	49
36	ERA 36	1	-	-	6	13	3	-	-	1	30	40	4	-	-	6	6	1	22	42	1	4	6	-	
38	Pt. Hope Subsistence Area	-	-	-	-	-	-	-	-	3	1	-	-	-	18	-	5	-	-	-	-	-	-	-	
39	Point Lay Subsistence Area	-	-	-	-	-	-	-	-	-	6	7	-	-	-	-	3	-	-	37	-	-	1	-	-
40	Wainwright Subsistence Area	-	-	-	-	-	-	-	-	-	1	6	8	1	-	-	-	-	1	11	-	-	38	-	7
42	Barrow Subsistence Area 2	-	-	-	-	-	-	-	2	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	1
45	ERA 45	-	-	-	-	-	-	-	-	15	3	-	-	-	41	-	16	-	-	1	-	-	-	-	-
46	ERA 45	2	-	-	9	2	-	-	-	-	-	-	-	-	-	7	1	-	1	-	-	-	-	-	-
47	Ice/Sea Segment 10	6	1	-	15	22	3	-	-	-	2	3	-	-	-	10	-	5	21	2	-	1	-	-	-
48	Ice/Sea Segment 11	1	4	5	-	6	34	4	-	-	1	6	3	1	-	-	-	3	5	1	21	43	1	1	-
49	Hanna's Shoal Polynya	-	5	29	-	1	6	5	1	-	-	-	-	-	-	-	-	1	-	-	16	1	-	2	-
50	Ice/Sea Segment 12	-	-	-	-	-	4	2	-	-	-	6	25	3	-	-	-	-	-	-	1	37	5	1	6
51	Ice/Sea Segment 13	-	-	-	-	-	-	1	-	-	-	-	17	16	-	-	-	-	-	-	-	2	4	2	35
52	Ice/Sea Segment 14	-	-	-	-	-	-	1	17	-	-	-	-	23	-	-	-	-	-	-	-	-	-	4	2
56	ERA 56	-	2	6	-	2	25	20	1	-	-	8	41	9	-	-	-	2	2	1	15	50	11	7	13
64	Peard Bay	-	-	-	-	-	-	-	1	-	-	-	3	11	-	-	-	-	-	-	-	-	2	1	44
70	ERA 70	4	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	1	-	-	-	-
99	ERA 99	1	-	-	8	20	5	-	-	1	48	63	5	-	-	8	8	1	36	66	1	5	7	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-27 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 30 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	1	1	1	7	6	2	3	10	20	21	19	18	23	33	6	22	1	7	36	1	7	32	6	34
1	Kasegaluk Lagoon	-	-	-	2	3	-	-	-	1	11	13	3	-	1	2	6	-	4	31	-	1	7	-	-
2	Point Barrow, Plover Islands	-	-	-	-	-	-	1	5	-	-	-	-	6	-	-	-	-	-	-	-	-	-	2	1
3	ERA 3	-	-	-	2	-	-	-	-	7	2	-	-	-	7	1	4	-	-	-	-	-	-	-	-
4	ERA 4	-	-	-	-	-	-	-	-	3	1	-	-	-	3	-	1	-	-	-	-	-	-	-	-
6	ERA 6	-	-	-	1	3	3	5	9	-	2	12	28	30	-	1	-	1	5	4	1	10	54	9	62
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	6	6	2	-	-	10	36	21	3	-	10	5	41	-	7	71	1	2	5	-	-
11	Wrangel Island 12 nmi Buffer	2	1	1	1	1	-	-	-	-	-	-	-	-	-	1	-	1	1	-	1	-	-	-	-
13	ERA 13	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
14	ERA 14	-	-	-	2	1	-	-	-	16	5	1	-	-	46	1	10	-	-	3	-	-	-	-	-
15	ERA 15	-	-	-	3	2	-	-	-	21	16	3	-	-	58	3	39	-	2	8	-	-	1	-	-
16	ERA 16	-	-	-	1	-	-	-	-	5	1	-	-	-	5	-	2	-	-	-	-	-	-	-	-
18	ERA 18	3	1	-	16	7	1	-	-	42	18	5	-	-	37	12	24	2	5	8	-	1	1	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	8	-	1	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	6	-	-	3	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	1	10	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	-	-	-	-	-	-	3	3	-	-	-	-	-	1	1	-	1	14	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	1	1	-	10
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Spring Lead 7	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
29	Ice/Sea Segment 1	-	-	-	-	-	-	1	3	-	-	-	-	4	-	-	-	-	-	-	-	-	-	1	1
30	Ice/Sea Segment 2	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
31	Ice/Sea Segment 3	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	ERA 35	2	2	2	1	4	10	11	13	-	1	18	54	45	-	1	-	3	6	3	4	31	52	14	54
36	ERA 36	4	2	2	14	22	8	2	-	4	36	46	12	1	2	14	12	4	32	47	3	13	16	1	2
38	Pt. Hope Subsistence Area	-	-	-	1	1	-	-	-	8	4	1	-	-	24	1	9	-	1	3	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	2	3	1	-	-	2	15	13	2	-	1	2	8	-	4	45	-	2	3	-	-
40	Wainwright Subsistence Area	-	-	-	2	4	2	1	-	1	6	18	21	4	-	2	2	1	7	19	-	7	53	1	13
42	Barrow Subsistence Area 2	-	-	-	-	-	-	1	8	-	-	-	1	8	-	-	-	-	-	-	-	-	-	2	3
45	ERA 45	-	-	-	3	1	-	-	-	26	11	2	-	-	51	2	24	-	1	6	-	-	-	-	-
46	Herald Shoal Polynya	6	3	1	20	9	2	-	-	3	5	3	-	-	1	18	5	5	8	3	1	1	1	-	-
47	Ice/Sea Segment 10	10	4	2	21	29	7	1	-	1	5	9	3	-	-	16	2	10	31	5	3	5	4	1	1
48	Ice/Sea Segment 11	5	12	14	1	13	43	12	3	-	2	13	9	4	-	2	-	11	14	4	30	51	4	7	3
49	Hanna's Shoal Polynya	4	14	40	-	3	15	16	8	-	1	2	2	3	-	-	-	7	3	1	27	7	-	11	1
50	Ice/Sea Segment 12	1	2	2	-	3	12	8	2	-	1	10	34	9	-	-	-	2	3	1	7	46	11	5	14
51	Ice/Sea Segment 13	-	1	1	-	1	3	5	2	-	-	3	28	22	-	-	-	1	1	-	2	9	16	6	43
52	Ice/Sea Segment 14	-	-	1	-	-	-	4	26	-	-	-	2	27	-	-	-	-	-	-	-	-	1	8	7
53	Ice/Sea Segment 15	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
54	Ice/Sea Segment 16a	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	ERA 56	5	9	15	1	6	34	32	8	-	1	15	49	19	-	1	-	7	6	3	24	58	22	20	23
59	ERA 59	-	-	-	1	-	-	-	-	2	1	-	-	-	2	1	1	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	3	1	-	-	-	3	-	1	-	-	-	-	-	-	-	-
63	ERA 63	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
64	Peard Bay	-	-	-	-	-	1	3	5	-	-	2	10	20	-	-	-	-	1	-	-	4	5	6	51
66	ERA 66	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
70	ERA 70	8	9	6	-	1	2	1	-	-	-	-	-	-	-	-	-	8	1	-	5	1	-	1	-
82	ERA 82	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
99	ERA 99	4	3	2	19	33	12	2	-	5	54	69	14	1	2	18	16	6	47	69	4	16	18	1	2

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-28 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 60 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	Land	2	2	2	8	10	7	8	18	21	27	27	28	32	34	7	27	2	12	43	3	13	40	13	44
1	Kasegaluk Lagoon	-	-	-	3	4	1	-	-	2	14	16	5	-	1	3	7	-	5	34	-	3	8	-	-
2	Point Barrow, Plover Islands	-	-	-	-	-	-	2	9	-	-	-	-	8	-	-	-	-	-	-	-	-	-	3	3
3	ERA 3	-	-	-	2	-	-	-	-	7	2	-	-	-	7	1	4	-	-	-	-	-	-	-	-
4	ERA 4	-	-	-	-	-	-	-	-	3	1	-	-	-	3	-	1	-	-	-	-	-	-	-	-
6	ERA 6	1	2	2	2	6	8	11	15	-	3	16	35	36	-	2	1	2	9	6	4	16	58	16	66
10	Ledyard Bay Spectacled Eider Critical Habitat	1	-	-	7	8	2	-	-	11	38	22	4	-	11	6	43	-	9	72	1	3	6	-	-
11	Wrangel Island12 nmi Buffer	2	1	1	1	1	1	-	-	-	-	-	-	-	-	2	-	2	1	-	1	-	-	-	-
13	ERA 13	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
14	ERA 14	-	-	-	2	1	-	-	-	16	6	1	-	-	46	1	11	-	-	3	-	-	-	-	-
15	ERA 15	-	-	-	4	3	-	-	-	22	19	4	-	-	58	3	40	-	2	9	-	-	1	-	-
16	ERA 16	-	-	-	1	-	-	-	-	5	1	-	-	-	5	-	2	-	-	-	-	-	-	-	-
18	ERA 18	3	1	-	16	7	1	-	-	42	19	5	1	-	37	12	25	2	5	8	-	1	1	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	8	-	1	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	6	-	-	3	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	1	10	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	-	-	-	-	-	-	3	3	-	-	-	-	-	1	1	-	1	14	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	1	1	-	10
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Spring Lead 7	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
29	Ice/Sea Segment 1	-	-	-	-	-	-	1	5	-	-	-	1	5	-	-	-	-	-	-	-	-	-	2	2
30	Ice/Sea Segment 2	-	-	-	-	-	-	1	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2	-
31	Ice/Sea Segment 3	-	-	-	-	-	-	1	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
32	Ice/Sea Segment 5	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	ERA 35	3	5	7	2	8	16	20	20	-	2	22	60	50	-	2	-	6	10	5	9	38	58	24	59
36	ERA 36	5	4	2	17	26	11	4	1	5	38	51	16	3	2	16	12	6	37	50	4	17	21	2	4
38	Pt. Hope Subsistence Area	-	-	-	1	1	-	-	-	8	6	1	-	-	24	1	10	-	1	3	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	3	5	2	-	-	2	18	16	3	-	2	3	10	-	6	48	1	3	5	-	-
40	Wainwright Subsistence Area	1	1	-	3	8	5	2	2	1	9	23	27	7	-	3	4	2	11	23	1	13	59	3	16
42	Barrow Subsistence Area 2	-	-	-	-	-	-	2	12	-	-	-	1	10	-	-	-	-	-	-	-	-	1	3	4
45	ERA 45	-	-	-	3	2	-	-	-	26	13	3	-	-	51	2	25	-	2	8	-	-	-	-	-
46	Herald Shoal Polynya	7	3	1	21	9	3	1	-	3	6	4	1	-	1	19	6	5	8	5	1	2	1	-	-
47	Ice/Sea Segment 10	11	5	2	22	31	9	2	1	1	6	12	5	1	-	17	2	11	33	6	3	6	5	1	1
48	Ice/Sea Segment 11	7	15	18	2	17	47	17	7	-	4	20	15	8	-	3	1	14	18	8	34	56	8	12	8
49	Hanna's Shoal Polynya	7	19	46	1	6	22	24	15	-	2	7	8	9	-	1	-	10	5	4	35	15	3	20	6
50	Ice/Sea Segment 12	2	5	6	1	5	16	13	5	-	1	13	38	13	-	1	-	5	6	3	11	50	16	10	17
51	Ice/Sea Segment 13	1	2	3	-	2	7	10	5	-	-	5	34	26	-	-	-	2	2	1	5	13	25	11	47
52	Ice/Sea Segment 14	-	1	2	-	-	2	7	29	-	-	1	4	29	-	-	-	-	1	-	1	2	2	13	9
53	Ice/Sea Segment 15	-	-	-	-	-	-	2	4	-	-	-	-	3	-	-	-	-	-	-	1	-	-	2	1
54	Ice/Sea Segment 16a	-	-	-	-	-	-	1	3	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
55	Ice/Sea Segment 17	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	ERA 56	7	14	22	1	9	40	40	15	-	2	19	56	27	-	2	-	11	9	4	31	65	27	29	31
59	ERA 59	-	-	-	1	-	-	-	-	2	1	-	-	-	2	1	1	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	3	1	-	-	-	3	-	1	-	-	-	-	-	-	-	-
63	ERA 63	3	2	1	-	-	-	-	1	-	-	-	-	-	-	-	-	2	-	-	1	-	-	-	-
64	Peard Bay	-	1	2	-	2	4	7	8	-	-	3	15	23	-	-	-	1	2	-	2	7	8	10	55
65	Smith Bay	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	ERA 66	-	-	-	-	-	-	-	4	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	1
70	ERA 70	9	10	7	-	1	3	1	1	-	-	1	1	1	-	1	-	9	1	-	7	2	-	1	-
82	ERA 82	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
99	ERA 99	5	5	3	21	36	15	4	1	6	54	70	18	3	3	19	16	7	50	69	5	20	22	3	4

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-29 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 180 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	3	2	3	10	12	8	12	23	23	29	28	32	35	36	9	29	3	14	44	4	16	45	18	47
1	Kasegaluk Lagoon	-	-	-	3	4	1	-	-	2	14	16	5	-	1	3	7	-	6	34	-	3	8	-	-
2	Point Barrow, Plover Islands	-	-	1	-	-	-	2	9	-	-	-	1	8	-	-	-	-	-	-	-	-	1	4	3
3	ERA 3	-	-	-	2	-	-	-	-	7	2	-	-	-	7	1	4	-	-	-	-	-	-	-	-
4	ERA 4	-	-	-	-	-	-	-	-	3	1	-	-	-	3	-	1	-	-	-	-	-	-	-	-
6	ERA 6	2	3	4	2	7	10	16	18	-	3	17	38	38	-	2	1	3	10	7	5	18	59	21	67
10	Ledyard Bay Spectacled Eider Critical Habitat	1	-	-	8	8	2	1	1	11	38	22	4	-	11	6	43	-	9	72	1	3	6	-	-
11	Wrangel Island 12nmi Buffer	2	1	1	1	1	1	-	-	-	1	1	-	-	-	2	-	2	1	1	1	-	-	-	-
13	ERA 13	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
14	ERA 14	-	-	-	2	1	-	-	-	16	6	1	-	-	46	1	11	-	-	3	-	-	-	-	-
15	ERA 15	-	-	-	4	3	-	-	-	22	19	4	-	-	58	3	41	-	3	9	-	-	1	-	-
16	ERA 16	-	-	-	1	-	-	-	-	5	1	-	-	-	5	-	2	-	-	-	-	-	-	-	-
18	ERA 18	3	1	-	16	7	1	-	-	42	20	5	1	-	37	12	26	2	5	8	-	1	1	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	8	-	1	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	6	-	-	3	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	1	10	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	-	-	-	-	-	-	3	4	-	-	-	-	-	1	1	-	1	14	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	1	1	-	10
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Spring Lead 7	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
29	Ice/Sea Segment 1	-	-	-	-	-	1	3	6	-	-	-	1	6	-	-	-	-	-	-	1	1	-	3	3
30	Ice/Sea Segment 2	-	-	1	-	-	1	4	4	-	-	-	1	2	-	-	-	-	-	-	1	1	-	3	-
31	Ice/Sea Segment 3	-	-	1	-	-	1	3	3	-	-	-	-	1	-	-	-	-	-	-	1	1	-	2	-
32	Ice/Sea Segment 4	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	ERA 35	5	7	9	3	10	18	24	23	-	2	23	61	52	-	3	-	7	12	5	11	40	59	27	61
36	ERA 36	5	4	3	18	27	11	4	1	5	39	51	17	3	2	16	12	6	37	50	4	18	22	3	5
38	Pt. Hope Subsistence Area	-	-	-	2	1	-	-	-	8	6	2	-	-	24	1	10	-	1	4	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	4	5	2	1	-	2	19	16	3	-	2	3	10	-	6	48	1	3	5	-	-
40	Wainwright Subsistence Area	1	1	1	4	9	6	4	3	1	10	25	29	9	-	4	4	2	12	24	2	14	60	4	18
42	Barrow Subsistence Area 2	-	-	1	-	-	-	3	13	-	-	-	2	11	-	-	-	-	-	-	-	-	1	5	4
45	ERA 45	-	-	-	3	2	-	-	-	26	13	3	-	-	51	2	26	-	2	8	-	-	-	-	-
46	Herald Shoal Polynya	7	3	1	22	10	3	1	-	3	6	4	1	-	1	19	6	5	9	5	1	2	1	1	-
47	Ice/Sea Segment 10	11	5	2	22	31	9	2	1	1	6	12	5	1	-	17	2	11	33	6	4	7	6	1	2
48	Ice/Sea Segment 11	8	17	20	3	18	49	21	10	-	5	22	20	10	-	3	1	15	20	9	36	58	12	16	10
49	Hanna's Shoal Polynya	9	23	49	2	9	28	31	22	-	4	11	19	17	-	2	1	14	8	7	40	22	14	27	14
50	Ice/Sea Segment 12	4	8	9	1	7	19	17	8	-	2	15	41	16	-	2	1	7	7	3	13	52	21	14	20
51	Ice/Sea Segment 13	2	3	5	1	3	9	15	9	-	1	8	38	29	-	1	1	3	3	2	7	17	30	15	49
52	Ice/Sea Segment 14	1	2	4	-	1	4	11	30	-	-	2	6	30	-	-	-	2	1	-	4	4	4	15	9
53	Ice/Sea Segment 15	-	1	2	-	1	2	5	6	-	-	1	1	4	-	-	-	1	1	-	3	2	-	4	1
54	Ice/Sea Segment 16a	-	1	3	-	1	3	5	7	-	-	1	1	4	-	-	-	1	1	-	3	3	-	5	1
55	Ice/Sea Segment 17	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
56	ERA 56	8	16	24	2	10	42	43	16	-	2	20	57	28	-	3	-	13	11	4	33	67	29	31	32
59	ERA 59	-	-	-	1	-	-	-	-	2	1	-	-	-	2	1	1	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	3	1	-	-	-	3	-	1	-	-	-	-	-	-	-	-
63	ERA 63	3	2	1	-	-	-	1	2	-	-	-	-	-	-	-	-	2	-	-	1	-	-	1	-
64	Peard Bay	1	2	3	-	2	5	10	10	-	-	4	17	24	-	-	-	2	2	-	3	9	10	13	56
65	Smith Bay	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	ERA 66	-	-	-	-	-	-	1	4	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	1
69	Harrison Bay/Colville Delta	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	ERA 70	9	10	8	-	2	3	2	1	-	-	1	1	1	-	1	-	9	1	-	7	2	1	1	-
82	ERA 82	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
99	ERA 99	5	5	3	21	36	15	4	1	6	54	71	18	3	3	19	16	8	50	69	5	21	23	3	5

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-30 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 360 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	4	3	6	12	13	10	17	34	28	31	30	34	42	41	10	32	4	15	45	6	18	47	23	50
1	Kasegaluk Lagoon	-	-	-	3	4	1	-	-	2	14	16	5	-	1	3	7	-	6	34	-	3	9	-	-
2	Point Barrow, Plover Islands	-	-	2	-	-	2	6	13	-	-	-	1	10	-	-	-	-	-	-	2	2	1	6	4
3	ERA 3	-	-	-	2	-	-	-	-	7	2	-	-	-	7	1	4	-	-	-	-	-	-	-	-
4	ERA 4	-	-	-	-	-	-	-	-	3	1	-	-	-	3	-	1	-	-	-	-	-	-	-	-
6	ERA 6	2	3	6	2	8	12	20	22	-	3	18	39	40	-	2	1	4	11	7	7	20	60	24	68
10	Ledyard Bay SPEI Crit Hab	1	-	-	8	8	2	1	1	11	38	22	4	-	11	6	43	-	9	72	1	3	6	-	-
11	Wrangel Island 12nmi Buffer	2	1	1	1	1	1	-	-	-	1	1	-	-	-	2	-	2	1	1	1	-	-	-	-
13	ERA 13	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
14	ERA 14	-	-	-	2	1	-	-	-	16	6	1	-	-	46	1	11	-	-	3	-	-	-	-	-
15	ERA 15	-	-	-	4	3	-	-	-	22	19	4	-	-	58	3	41	-	3	9	-	-	1	-	-
16	ERA 16	-	-	-	1	-	-	-	-	7	2	-	-	-	7	1	3	-	-	-	-	-	-	-	-
18	ERA 18	3	1	-	16	7	1	-	-	42	20	5	1	-	37	12	26	2	5	8	-	1	1	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	8	-	1	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	6	-	-	3	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	1	10	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	1	-	-	-	-	-	4	4	-	-	-	-	-	1	1	-	1	15	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	1	1	-	11
24	Beaufort Spring Lead 6	-	1	1	-	-	2	3	3	-	-	1	1	4	-	-	-	1	1	-	1	1	1	3	1
25	Beaufort Spring Lead 7	-	2	4	-	1	4	6	5	-	-	1	2	4	-	-	-	1	1	-	4	4	1	4	1
26	Beaufort Spring Lead 8	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1
27	Beaufort Spring Lead 9	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
29	Ice/Sea Segment 1	-	-	1	-	-	1	3	6	-	-	-	1	6	-	-	-	-	-	-	1	1	-	4	3
30	Ice/Sea Segment 2	-	-	1	-	-	1	4	4	-	-	1	1	2	-	-	-	-	-	-	1	2	-	3	-
31	Ice/Sea Segment 3	-	-	1	-	-	1	3	3	-	-	-	-	1	-	-	-	-	-	-	1	1	-	2	-
32	Ice/Sea Segment 4	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	ERA 35	5	7	10	3	10	19	24	23	-	2	24	62	52	-	3	-	7	12	5	12	41	59	27	61
36	ERA 36	5	4	3	18	27	11	4	1	5	39	51	17	3	2	16	12	6	37	50	4	18	22	3	5
38	Pt. Hope Subsistence Area	-	-	-	2	1	-	-	-	8	6	2	-	-	24	1	10	-	1	4	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	4	5	2	1	-	2	19	16	3	-	2	3	10	-	6	48	1	3	5	-	-
40	Wainwright Subsistence Area	1	1	1	4	9	6	4	4	1	10	25	29	9	-	4	4	2	12	24	2	14	60	4	18
41	Barrow Subsistence Area 1	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	1
42	Barrow Subsistence Area 2	-	-	1	-	-	1	4	14	-	-	1	2	11	-	-	-	-	-	-	1	1	1	5	4
45	ERA 45	-	-	-	3	2	-	-	-	26	13	3	-	-	51	2	26	-	2	8	-	-	-	-	-
46	Herald Shoal Polynya	7	3	1	22	10	3	1	-	3	6	4	1	-	1	19	6	5	9	5	1	2	1	1	-
47	Ice/Sea Segment 10	11	5	2	22	31	9	2	1	1	6	12	5	1	-	17	2	11	33	6	4	7	6	1	2
48	Ice/Sea Segment 11	8	17	20	3	18	49	22	10	-	5	22	20	11	-	3	1	15	20	9	36	58	12	17	11
49	Hanna's Shoal Polynya	10	23	50	2	10	29	34	23	-	4	12	21	19	-	2	1	15	9	7	42	24	15	29	16
50	Ice/Sea Segment 12	4	8	9	1	7	19	17	8	-	2	15	41	16	-	2	1	7	7	3	13	52	21	14	21
51	Ice/Sea Segment 13	2	4	5	1	4	9	15	9	-	1	8	38	29	-	1	1	3	4	2	7	18	30	15	49
52	Ice/Sea Segment 14	1	3	5	-	1	5	11	30	-	-	2	6	30	-	-	-	2	1	-	5	5	4	15	9
53	Ice/Sea Segment 15	-	1	3	-	1	3	5	7	-	-	1	2	4	-	-	-	1	1	-	3	3	1	5	1
54	Ice/Sea Segment 16a	-	1	3	-	1	3	6	8	-	-	1	2	4	-	-	-	1	1	-	3	3	-	5	1
55	Ice/Sea Segment 17	-	-	-	-	-	1	2	2	-	-	-	-	1	-	-	-	-	-	-	1	1	-	1	-
56	ERA 56	8	16	24	2	11	42	43	16	-	2	20	57	28	-	3	-	13	11	4	33	67	29	31	32
58	Ice/Sea Segment 20a	-	-	1	-	-	-	1	5	-	-	-	-	3	-	-	-	-	-	-	-	-	-	2	1
59	ERA 59	-	-	-	1	-	-	-	-	2	1	-	-	-	2	1	1	-	-	-	-	-	-	-	-
60	Ice/Sea Segment 22	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	3	1	-	-	-	3	-	1	-	-	-	-	-	-	-	-
62	Ice/Sea Segment 24a	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
63	ERA 63	3	2	1	-	-	-	1	2	-	-	-	1	1	-	-	-	2	-	-	1	1	1	1	-
64	Peard Bay	1	2	4	-	2	6	13	12	-	-	4	18	25	-	-	-	2	3	-	5	10	10	15	56
65	Smith Bay	-	-	-	-	-	-	1	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
66	ERA 66	-	1	4	-	1	4	6	7	-	-	1	2	3	-	-	-	1	1	-	4	4	1	5	1
67	Herschel Island	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	Harrison Bay	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	Harrison Bay/Colville Delta	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
70	ERA 70	9	10	8	-	2	4	2	1	-	-	1	2	1	-	1	-	9	1	-	7	3	1	1	1
76	ERA 76	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
79	ERA 79	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
82	ERA 82	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
83	Kaktovik ERA	-	-	-	-	-	-	1	3	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2	1
99	ERA 99	5	5	3	21	36	15	4	1	6	54	71	19	3	3	19	16	8	50	69	5	21	24	3	5

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-31 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 3 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
79	Point Belcher, Wainwright	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
81	Peard Bay, Point Franklin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
83	Nulavik, Loran Radio Station	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-32 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 10 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	1	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	1	-	-	-	-	4	-	2	-	-	-	-	-	-	-	-
66	Ayugatak Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	6	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	6	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	3	-	-	-	-	-
75	Akeonik, Icy Cape	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
78	Nivat Point, Nokotlek Point	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-
79	Point Belcher, Wainwright	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	7	-	-
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	3	-	1
81	Peard Bay, Point Franklin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
83	Nulavik, Loran Radio Station	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	3
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	-	1	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	1

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-33 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 30 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
27	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	Neskan, Laguna Neskan	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
37	Chegitun, Utkan	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
63	Asikpak Lag., Cape Seppings,	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	3	1	-	-	-	9	-	2	-	-	1	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	1	-	-	-	-	2	1	-	-	-	7	-	4	-	-	1	-	-	-	-	-
66	Ayugatak Lagoon	-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	2	-	-	1	-	-	-	-	-
67	Cape Sabine, Pitmegea River	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
68	Agiak Lagoon, Punuk Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
69	Cape Beaufort, Omalik Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	2	-	-	3	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	1	-	-	7	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	1	-	-	9	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	1	1	-	-	-	-	2	3	-	-	-	1	1	-	1	5	-	-	1	-	-
75	Akeonik, Icy Cape	-	-	-	-	1	-	-	-	-	1	3	1	-	-	-	-	-	1	4	-	-	1	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	1	-	-
77	Nivat Point, Nokotlek Point	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	1	1	-	-	2	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	1	-	-	-	7	-	-
79	Point Belcher, Wainwright	-	-	-	-	-	-	-	-	-	-	2	4	1	-	-	-	-	1	-	-	2	11	-	1
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	-	-	-	-	-	-	1	4	1	-	-	-	-	1	-	-	1	5	-	3
81	Peard Bay, Point Franklin	-	-	-	-	-	-	-	-	-	-	1	2	1	-	-	-	-	-	-	-	1	2	-	3
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	1	-	11
83	Nulavik, Loran Radio Station	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	1	5
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	1	1	-	-	-	1	4	-	-	-	-	-	-	-	-	-	1	6
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	1	5	-	-	-	1	9	-	-	-	-	-	-	-	-	-	3	4
86	Dease Inlet, Plover Islands	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-34 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 60 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
8	E. Wrangel Island, Skeletov	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
27	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	Mys Dzhenretlen, Eynenekvyk	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
33	Neskan, Laguna Neskan	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
37	Chegitun, Utkan	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
63	Asikpak Lag., Cape Seppings	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	3	2	-	-	-	9	-	2	-	-	1	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	1	-	-	-	-	2	2	1	-	-	7	1	4	-	-	1	-	-	-	-	-
66	Ayugatak Lagoon	-	-	-	-	-	-	-	-	1	1	1	-	-	1	-	2	-	-	1	-	-	-	-	-
67	Cape Sabine, Pitmegea River	-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	1	-	-	1	-	-	-	-	-
68	Agiak Lagoon, Punuk Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
69	Cape Beaufort, Omalik Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	2	-	-	3	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	2	-	-	8	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	1	-	-	-	-	4	2	-	-	-	1	2	-	-	9	-	-	1	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	1	1	-	-	-	-	3	4	1	-	-	1	1	-	2	6	-	1	1	-	-
75	Akeonik, Icy Cape	-	-	-	1	1	-	-	-	-	2	4	1	-	-	-	-	-	2	5	-	-	1	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	-	-	1	-	-
77	Nivat Point, Nokotlek Point	-	-	-	-	1	-	-	-	-	1	2	1	-	-	-	-	-	1	1	-	-	2	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	1	-	-	-	-	-	2	2	-	-	-	-	-	1	1	-	1	8	-	-
79	Point Belcher, Wainwright	-	-	-	-	1	1	1	1	-	-	3	6	1	-	-	-	-	1	1	1	3	13	1	2
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	-	1	-	1	-	-	1	4	2	-	-	-	-	1	-	-	2	6	1	4
81	Peard Bay, Point Franklin	-	-	-	-	1	1	-	-	-	-	1	4	1	-	-	-	-	1	-	-	2	4	1	4
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	-	1	2	1	13
83	Nulavik, Loran Radio Station	-	-	1	-	-	1	1	1	-	-	-	2	3	-	-	-	-	-	-	1	1	-	1	6
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	2	2	-	-	-	2	6	-	-	-	-	-	-	-	1	-	2	7
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	3	8	-	-	-	1	11	-	-	-	-	-	-	-	-	1	6	5
86	Dease Inlet, Plover Islands	-	-	-	-	-	-	1	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	1
87	Igalik & Kulgurak Island	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
88	Cape Simpson, Piasuk River	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89	Ikpikpuk River, Point Poleakoon	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-35 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 180 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
8	E. Wrangel Island, Skeletov	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
27	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Nutepynmin, Pyngopil'gyn,	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
32	Mys Dzhenretlen, Eynenekvyk	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
33	Neskan, Laguna Neskan	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	2	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
37	Chegitun, Utkan	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
63	Asikpak Lag., Cape Seppings,	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	3	2	-	-	-	9	-	2	-	-	1	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	1	1	-	-	-	2	2	1	-	-	7	1	4	-	1	2	-	-	-	-	-
66	Ayugatak Lagoon	-	-	-	-	-	-	-	-	1	1	1	-	-	1	-	2	-	-	2	-	-	-	-	-
67	Cape Sabine, Pitmegea River	-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	2	-	-	1	-	-	-	-	-
68	Agiak Lagoon, Punuk Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
69	Cape Beaufort, Omalik Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	1	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	2	-	-	3	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	2	-	-	8	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	1	1	-	-	-	-	4	2	-	-	-	1	2	-	1	9	-	-	1	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	1	1	-	-	-	-	3	4	1	-	-	1	2	-	2	6	-	1	1	-	-
75	Akeonik, Icy Cape	-	-	-	1	1	-	-	-	-	2	4	1	-	-	1	-	-	2	6	-	-	1	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	1	1	-	-	1	-	-
77	Nivat Point, Nokotlek Point	-	-	-	-	1	-	-	-	-	1	2	1	-	-	-	-	-	1	1	-	-	2	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	1	-	-	-	-	-	3	3	-	-	-	-	-	2	1	-	1	9	-	1
79	Point Belcher, Wainwright	-	-	-	-	1	1	1	1	-	-	3	6	2	-	-	-	-	2	1	1	3	13	1	2
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	1	1	1	1	-	-	1	5	3	-	-	-	-	1	-	-	3	7	1	5
81	Peard Bay, Point Franklin	-	-	-	-	1	1	1	-	-	-	2	4	2	-	-	-	-	1	-	-	2	4	1	4
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	1	3	3	-	-	-	-	-	-	-	1	2	1	13
83	Nulavik, Loran Radio Station	-	-	1	-	1	1	1	1	-	-	-	2	3	-	-	-	-	-	-	1	2	-	2	7
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	1	3	3	-	-	-	2	6	-	-	-	-	-	-	-	1	1	3	8
85	Barrow, Browerville, Elson Lag.	-	-	1	-	-	-	4	9	-	-	-	2	12	-	-	-	-	-	-	1	-	1	7	6
86	Dease Inlet, Plover Islands	-	-	-	-	-	-	1	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	1
87	Igalik & Kulgurak Island	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
88	Cape Simpson, Piasuk River	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89	Ikpikpuk River, Point Poleakoon	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
91	Lonely, Pitt Point, Pogik Bay	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-36 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 360 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
8	E. Wrangel Island, Skeletov	-	-	-	-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
26	Ekugvaam, Kepin, Pil'khin	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	Vankarem,Vankarem Laguna	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Mys Onman, Vel'may	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
30	Nutepynmin, Pyngopil'gyn	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
31	Alyatki, Zaliv Tasytkhin	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
32	Mys Dzhenretlen, Eynenekvyk	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
33	Neskan, Laguna Neskan	-	-	-	-	-	-	-	-	2	1	-	-	-	1	-	1	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	3	1	-	-	-	3	-	1	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
37	Chegitun, Utkan	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
63	Asikpak Lag., Cape Seppings	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	3	2	-	-	-	9	-	2	-	-	1	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	1	1	-	-	-	2	2	1	-	-	7	1	4	-	1	2	-	-	-	-	-
66	Ayugatak Lagoon	-	-	-	-	-	-	-	-	1	1	1	-	-	1	-	2	-	-	2	-	-	-	-	-
67	Cape Sabine, Pitmegea River	-	-	-	-	-	-	-	-	1	1	-	-	-	1	-	2	-	-	1	-	-	-	-	-
68	Agiak Lagoon, Punuk Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
69	Cape Beaufort, Omalik Lagoon	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	1	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	2	-	-	3	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	2	-	-	8	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	1	1	-	-	-	-	4	2	-	-	-	1	2	-	1	9	-	-	1	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	1	1	-	-	-	-	3	4	1	-	-	1	2	-	2	6	-	1	1	-	-
75	Akeonik, Icy Cape	-	-	-	1	1	-	-	-	-	2	4	1	-	-	1	-	-	2	6	-	-	1	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	1	1	-	-	1	-	-
77	Nivat Point, Nokotlek Point	-	-	-	-	1	-	-	-	-	1	2	1	-	-	-	-	-	1	1	-	-	2	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	1	-	-	-	-	-	3	3	-	-	-	-	-	2	1	-	1	9	-	1
79	Point Belcher, Wainwright	-	-	-	-	1	2	1	1	-	-	3	6	2	-	-	-	-	2	1	1	3	13	1	2
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	1	1	1	1	-	-	2	5	3	-	-	-	-	1	-	-	3	7	1	5
81	Peard Bay, Point Franklin	-	-	-	-	1	1	1	-	-	-	2	4	2	-	-	-	-	1	-	-	2	4	1	4
82	Skull Cliff	-	-	-	-	-	-	-	1	-	-	1	3	3	-	-	-	-	-	-	-	1	2	1	13
83	Nulavik, Loran Radio Station	-	-	1	-	1	1	1	1	-	-	-	2	3	-	-	-	-	-	-	1	2	1	2	7
84	Will Rogers & Wiley Post Mem.	-	1	2	-	-	2	5	5	-	-	1	3	7	-	-	-	-	-	-	2	2	1	6	8
85	Barrow, Browerville, Elson Lag.	-	-	1	-	-	1	5	10	-	-	-	2	13	-	-	-	-	-	-	1	1	2	8	7
86	Dease Inlet, Plover Islands	-	-	-	-	-	-	1	3	-	-	-	-	3	-	-	-	-	-	-	-	-	-	1	1
87	Igalik & Kulgurak Island	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
88	Cape Simpson, Piasuk River	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89	Ikpikpuk River Point Poleakoon	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
91	Lonely, Pitt Point, Pogik Bay	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-37 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 3 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
96	United States Chukchi Coast	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	1	-	-	7	-	-	3	-	7

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-38 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 10 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	1	-	-	-	-	4	-	2	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	-	-	-	-	-	-	1	3	2	-	-	-	-	-	-	-	-	4	-	14
90	Kasegaluk Lagoon Special Use Area	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
95	Russia Chukchi Coast	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
96	United States Chukchi Coast	-	-	-	-	-	-	-	-	2	5	5	4	3	12	-	6	-	-	20	-	-	13	-	17
97	United States Beaufort Coast	-	-	-	-	-	-	-	1	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	2

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-39 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 30 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	1	1	-	1	1	-	-	-	-	-	-	-	-	-	1	-	1	1	-	-	-	-	-	-
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	3	1	-	-	-	8	-	4	-	-	1	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	1	1	1	3	-	1	4	10	8	-	-	-	-	2	2	-	3	11	2	23
90	Kasegaluk Lagoon Special Use Area	-	-	-	-	1	-	-	-	-	1	2	1	-	-	-	-	-	1	2	-	-	3	-	-
95	Russia Chukchi Coast	1	1	-	3	1	-	-	-	11	3	-	-	-	12	3	5	1	1	-	-	-	-	-	-
96	United States Chukchi Coast	-	-	-	3	4	2	2	2	8	18	19	18	11	20	3	18	-	6	35	-	6	32	3	29
97	United States Beaufort Coast	-	-	-	-	-	-	2	7	-	-	-	1	11	-	-	-	-	-	-	-	-	-	3	5

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-40 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 60 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	1	1	-	1	1	-	-	-	-	-	-	-	-	-	1	-	1	1	-	-	-	-	-	-
88	Alaska Maritime National Wildlife Refuge	-	-	-	1	-	-	-	-	3	2	1	-	-	8	1	4	-	-	1	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	1	-	2	3	2	8	-	1	7	14	13	-	-	-	1	3	3	1	7	15	4	28
90	Kasegaluk Lagoon Special Use Area	-	-	-	-	1	-	-	-	-	1	3	2	-	-	-	-	-	1	2	-	-	4	-	-
91	Teshekpuk Lake Special Use Area	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95	Russia Chukchi Coast	1	1	-	4	2	-	-	-	12	3	1	-	-	13	3	5	1	1	1	-	-	-	-	-
96	United States Chukchi Coast	1	1	1	5	9	6	4	5	9	24	26	26	17	21	4	21	1	11	42	2	13	40	7	37
97	United States Beaufort Coast	-	-	1	-	-	-	4	14	-	-	-	1	15	-	-	-	-	-	-	-	-	1	7	6

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-41 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 180 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	1	1	1	1	1	1	-	1	-	1	1	-	1	-	1	-	1	1	1	1	-	-	1	-
88	Alaska Maritime National Wildlife Refuge	-	-	-	1	1	-	-	-	3	2	1	-	-	8	1	4	-	1	2	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	1	1	1	3	3	4	9	-	1	7	16	14	-	1	-	1	4	3	2	8	17	5	30
90	Kasegaluk Lagoon Special Use Area	-	-	-	-	1	-	-	-	-	1	3	2	-	-	1	-	-	1	2	-	-	4	-	-
91	Teshekpuk Lake Special Use Area	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
95	Russia Chukchi Coast	2	1	1	5	2	1	1	1	14	4	1	-	1	14	4	6	1	1	1	1	-	-	1	-
96	United States Chukchi Coast	1	1	2	6	10	7	7	7	9	25	28	29	19	21	5	22	2	13	43	3	15	43	9	40
97	United States Beaufort Coast	-	-	1	-	-	-	5	16	-	-	-	2	17	-	-	-	-	-	-	1	-	2	9	8

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-42 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 360 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	1	1	1	1	1	1	1	3	-	1	1	-	2	-	1	-	1	1	1	1	-	-	1	1
88	Alaska Maritime National Wildlife Refuge	-	-	-	1	1	-	-	-	3	2	1	-	-	8	1	4	-	1	2	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	1	2	1	3	4	5	12	-	2	8	17	16	-	1	1	1	4	3	2	9	18	7	32
90	Kasegaluk Lagoon Special Use Area	-	-	-	-	1	-	-	-	-	1	3	2	-	-	1	-	-	1	2	-	-	4	-	-
91	Teshekpuk Lake Special Use Area	-	-	-	-	-	-	1	3	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
95	Russia Chukchi Coast	2	2	1	6	2	1	1	6	19	6	1	1	3	20	5	9	2	1	2	1	-	1	1	1
96	United States Chukchi Coast	1	2	3	6	11	8	9	9	9	25	28	31	20	21	5	23	2	13	44	4	16	44	11	41
97	United States Beaufort Coast	-	-	2	-	-	2	7	20	-	-	-	3	19	-	-	-	-	-	-	1	2	2	12	9

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-43 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 3 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11

Notes- All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A.2-44 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 10 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11

Notes- All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A.2-45 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 30 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
16	Chukchi Sea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
18	Chukchi Sea	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-
19	Chukchi Sea	-	-	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-46 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 60 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
16	Chukchi Sea	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-
17	Chukchi Sea	1	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-
18	Chukchi Sea	1	3	4	-	2	3	3	2	-	1	2	1	1	-	-	-	2	2	1	4	2	-	3	1
19	Chukchi Sea	1	2	3	-	1	1	3	2	-	-	1	1	1	-	-	-	1	1	-	3	1	-	3	1
20	Chukchi Sea	1	1	1	-	-	-	1	1	-	-	-	-	-	-	-	-	1	-	-	1	-	-	1	-
21	Chukchi Sea	-	-	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-
22	Chukchi Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
23	Beaufort Sea	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
26	Beaufort Sea	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-47 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 180 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
16	Chukchi Sea	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	-	-	-	-
17	Chukchi Sea	1	2	2	-	1	2	1	-	-	-	1	-	-	-	-	-	2	1	1	2	1	-	1	-
18	Chukchi Sea	3	5	8	1	5	8	9	6	-	3	7	6	5	-	1	1	4	6	5	8	9	4	8	5
19	Chukchi Sea	3	6	9	1	4	7	12	7	-	3	6	8	7	-	1	1	4	5	5	9	6	7	12	6
20	Chukchi Sea	4	7	8	1	5	7	6	4	-	1	5	6	5	-	1	-	6	5	2	9	7	4	6	7
21	Chukchi Sea	1	1	3	-	-	1	2	3	-	-	1	1	2	-	-	-	1	-	-	3	1	1	2	1
22	Chukchi Sea	-	-	1	-	-	-	1	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	1
23	Beaufort Sea	1	1	3	-	-	1	2	2	-	-	-	1	1	-	-	-	1	-	-	2	1	-	2	1
24	Beaufort Sea	-	-	1	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	1	-	-	2	1
25	Beaufort Sea	-	1	1	-	-	2	1	1	-	-	1	2	1	-	-	-	-	-	-	1	2	3	1	1
26	Beaufort Sea	-	1	2	-	-	1	3	2	-	-	-	1	2	-	-	-	-	-	-	1	1	-	3	2
27	Beaufort Sea	-	-	1	-	-	-	1	2	-	-	-	-	1	-	-	-	-	-	-	1	-	-	2	-
28	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-48 Summer Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 360 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
16	Chukchi Sea	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	-	-	-	-
17	Chukchi Sea	1	2	3	-	1	2	1	-	-	-	1	-	-	-	-	-	2	1	1	2	1	-	1	-
18	Chukchi Sea	3	5	8	1	5	8	9	6	-	3	7	7	5	-	1	1	5	6	5	8	9	5	8	5
19	Chukchi Sea	3	7	10	1	5	8	12	8	-	3	6	9	8	-	1	1	5	5	5	9	7	8	13	7
20	Chukchi Sea	4	7	8	1	5	8	6	4	-	1	5	6	6	-	1	-	6	5	2	9	7	5	6	8
21	Chukchi Sea	1	1	4	-	-	2	2	3	-	-	1	1	2	-	-	-	1	-	-	3	1	1	2	1
22	Chukchi Sea	-	-	1	-	-	-	1	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	1
23	Beaufort Sea	1	1	3	-	-	1	2	2	-	-	-	1	1	-	-	-	1	-	-	2	1	1	2	1
24	Beaufort Sea	-	-	1	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	1	-	-	2	1
25	Beaufort Sea	-	1	1	-	-	2	1	1	-	-	1	2	1	-	-	-	-	-	-	1	2	3	1	1
26	Beaufort Sea	-	1	2	-	-	1	3	2	-	-	-	1	2	-	-	-	-	-	-	1	1	-	3	2
27	Beaufort Sea	-	-	1	-	-	-	1	2	-	-	-	-	1	-	-	-	-	-	-	1	-	-	2	-
28	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	Beaufort Sea	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
35	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-49 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 3 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	5	-	-	1	-	1
1	Kasegaluk Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
6	ERA 6	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	6	-	10
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	3	-	-	9	-	-	-	-	-
14	ERA 14	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
15	ERA 15	-	-	-	-	-	-	-	-	1	-	-	-	-	7	-	4	-	-	-	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	1	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	1	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	15	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	5	-	-	1	-	1
38	Pt. Hope Subsistence Area	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	2	-	-	-	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	25	-	-	-	-	-
40	Wainwright Subsistence Area	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	3	-	-	22	-	1
41	Barrow Subsistence Area 1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	4
45	ERA 45	-	-	-	-	-	-	-	-	2	-	-	-	-	7	-	3	-	-	-	-	-	-	-	-
46	Herald Shoal Polynya	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
47	Ice/Sea Segment 10	1	-	-	9	12	-	-	-	-	-	-	-	-	-	2	-	-	4	-	-	-	-	-	-
48	Ice/Sea Segment 11	-	-	-	-	2	26	-	-	-	-	3	1	-	-	-	-	-	2	-	6	40	-	-	-
49	Hanna's Shoal Polynya	-	1	27	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-
50	Ice/Sea Segment 12	-	-	-	-	-	-	-	-	-	-	2	17	-	-	-	-	-	-	-	-	27	1	-	-
51	Ice/Sea Segment 13	-	-	-	-	-	-	-	-	-	-	-	10	10	-	-	-	-	-	-	-	-	-	-	28
52	Ice/Sea Segment 14	-	-	-	-	-	-	-	7	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-
99	ERA 99	-	-	-	-	1	-	-	-	-	6	8	-	-	-	-	-	-	3	9	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-50 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 10 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	-	-	-	-	-	-	-	-	1	3	2	1	2	3	-	2	-	-	14	-	-	3	-	4
1	Kasegaluk Lagoon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
6	ERA 6	-	-	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	-	-	9	-	12
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	-	-	-	-	-	-	3	2	-	-	-	-	4	-	-	11	-	-	-	-	-
14	ERA 14	-	-	-	-	-	-	-	-	1	-	-	-	-	6	-	1	-	-	-	-	-	-	-	-
15	ERA 15	-	-	-	-	-	-	-	-	1	1	-	-	-	7	-	5	-	-	-	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	1	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	7	-	-	2	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	12	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-	1	-	-	18	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	11
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Spring Lead 7	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
38	Pt. Hope Subsistence Area	-	-	-	-	-	-	-	-	1	-	-	-	-	9	-	3	-	-	-	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	-	-	-	-	-	-	6	3	-	-	-	-	3	-	-	31	-	-	-	-	-
40	Wainwright Subsistence Area	-	-	-	-	-	-	-	-	-	2	2	2	-	-	-	1	-	-	10	-	-	27	-	2
41	Barrow Subsistence Area 1	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	6
45	ERA 45	-	-	-	-	-	-	-	-	4	-	-	-	-	12	-	4	-	-	-	-	-	-	-	-
46	Herald Shoal Polynya	3	-	-	10	-	-	-	-	1	-	-	-	-	-	11	1	-	-	-	-	-	-	-	-
47	Ice/Sea Segment 10	3	-	-	12	17	1	-	-	-	2	1	-	-	-	4	-	1	10	1	-	-	-	-	-
48	Ice/Sea Segment 11	1	4	3	-	10	37	2	-	-	3	16	5	-	-	-	-	4	15	4	12	51	2	-	1
49	Hanna's Shoal Polynya	1	8	47	-	2	16	13	3	-	-	1	1	1	-	-	-	3	2	-	31	6	-	7	-
50	Ice/Sea Segment 12	-	-	-	-	-	2	1	-	-	-	5	25	3	-	-	-	-	1	-	-	33	4	-	7
51	Ice/Sea Segment 13	-	-	-	-	-	-	-	-	-	-	-	15	13	-	-	-	-	-	-	-	-	5	-	40
52	Ice/Sea Segment 14	-	-	-	-	-	-	-	12	-	-	-	-	24	-	-	-	-	-	-	-	-	-	1	3
99	ERA 99	-	-	-	-	3	-	-	-	-	8	10	-	-	-	-	-	-	5	12	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-51 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 30 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	1	-	-	2	1	-	-	1	5	12	6	3	4	9	3	11	-	1	21	-	1	9	-	7
1	Kasegaluk Lagoon	-	-	-	-	1	-	-	-	-	3	2	-	-	-	-	1	-	1	5	-	-	-	-	-
4	ERA 4	-	-	-	-	-	-	-	-	5	-	-	-	-	8	-	1	-	-	-	-	-	-	-	-
6	ERA 6	-	-	-	-	-	-	-	1	-	-	1	5	5	-	-	-	-	1	1	-	1	16	-	18
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	-	1	-	-	-	1	7	4	-	-	1	1	8	-	1	13	-	-	-	-	-
11	Wrangel Island	3	-	-	1	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-
14	ERA 14	-	-	-	-	-	-	-	-	2	-	-	-	-	8	-	1	-	-	-	-	-	-	-	-
15	ERA 15	-	-	-	-	-	-	-	-	2	2	-	-	-	9	-	7	-	-	-	-	-	-	-	-
16	ERA 16	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	-	-	-	-	11	-	2	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	-	-	-	-	1	5	1	-	-	1	-	10	-	-	3	-	-	-	-	-
21	Chukchi Spring Lead 3	-	-	-	-	1	-	-	-	-	6	4	-	-	-	1	2	-	1	15	-	-	-	-	-
22	Chukchi Spring Lead 4	-	-	-	-	2	1	-	-	-	2	5	6	-	-	-	-	-	2	5	-	2	25	-	-
23	Chukchi Spring Lead 5	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	2	-	14
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Spring Lead 7	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
38	Pt. Hope Subsistence Area	-	-	-	-	-	-	-	-	2	-	-	-	-	12	-	4	-	-	-	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	1	2	-	-	-	1	15	7	-	-	-	2	12	-	1	36	-	-	-	-	-
40	Wainwright Subsistence Area	-	-	-	1	2	-	-	-	-	7	7	7	-	-	1	4	-	1	17	-	1	38	-	4
41	Barrow Subsistence Area 1	-	-	-	-	-	-	-	1	-	-	-	1	4	-	-	-	-	-	-	-	-	1	-	9
45	ERA 45	-	-	-	-	-	-	-	-	6	1	-	-	-	16	-	7	-	-	-	-	-	-	-	-
46	Herald Shoal Polynya	7	-	-	17	1	-	-	-	4	1	-	-	-	2	20	3	1	-	-	-	-	-	-	-
47	Ice/Sea Segment 10	5	1	-	16	23	2	-	-	1	7	4	1	-	1	7	1	4	15	5	1	2	1	-	-
48	Ice/Sea Segment 11	4	10	7	5	24	45	9	1	1	13	35	14	5	-	4	4	11	31	19	18	63	6	6	5
49	Hanna's Shoal Polynya	6	20	59	2	13	35	33	15	-	4	11	9	12	-	1	1	13	14	6	47	24	2	26	9
50	Ice/Sea Segment 12	-	1	1	-	3	5	3	-	-	2	10	34	8	-	-	-	1	4	3	2	38	12	2	17
51	Ice/Sea Segment 13	-	-	-	-	-	-	1	1	-	-	1	22	16	-	-	-	-	-	-	-	3	17	1	46
52	Ice/Sea Segment 14	-	-	-	-	-	-	1	15	-	-	-	2	28	-	-	-	-	-	-	-	-	1	3	7
53	Ice/Sea Segment 15	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
59	ERA 59	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	2	-	-	-	-	4	-	1	-	-	-	-	-	-	-	-
99	ERA 99	-	-	-	3	8	2	-	-	-	12	15	2	-	-	2	3	1	10	17	-	3	3	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-52 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 60 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	2	1	-	6	4	1	1	2	10	18	10	8	6	15	6	18	1	4	27	-	3	17	1	11
1	Kasegaluk Lagoon	-	-	-	1	2	1	-	-	-	5	4	1	-	-	1	3	-	2	8	-	1	1	-	-
4	ERA 4	-	-	-	-	-	-	-	-	5	-	-	-	-	8	-	2	-	-	-	-	-	-	-	-
6	ERA 6	-	1	1	1	2	2	1	3	-	1	5	11	8	-	-	-	1	3	3	1	4	25	2	22
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	2	3	1	-	-	2	11	6	1	-	1	2	11	-	3	15	-	1	1	-	-
11	Wrangel Island	3	1	-	1	1	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-
14	ERA 14	-	-	-	-	-	-	-	-	2	1	-	-	-	9	-	3	-	-	-	-	-	-	-	-
15	ERA 15	-	-	-	-	1	-	-	-	3	4	1	-	-	10	-	9	-	1	1	-	-	-	-	-
16	ERA 16	-	-	-	-	-	-	-	-	3	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	1	1	-	-	-	12	-	3	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	-	1	-	-	-	1	7	2	1	-	1	-	12	-	1	5	-	1	-	-	-
21	Chukchi Spring Lead 3	-	-	-	2	2	-	-	-	1	8	5	1	-	-	2	5	-	2	17	-	-	1	-	-
22	Chukchi Spring Lead 4	-	-	-	2	3	1	-	-	-	4	9	10	-	-	1	1	-	4	8	-	4	29	-	2
23	Chukchi Spring Lead 5	-	-	-	-	-	-	1	-	-	-	1	3	3	-	-	-	-	-	-	1	1	5	1	16
24	Beaufort Spring Lead 6	-	-	-	-	-	-	-	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1
25	Beaufort Spring Lead 7	-	-	-	-	-	-	-	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	1
26	Beaufort Spring Lead 8	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	P.t Hope Subsistence Area	-	-	-	-	-	-	-	-	2	1	-	-	-	13	-	5	-	-	-	-	-	-	-	-
39	Point Lay Subsistence Area	-	-	-	3	4	1	-	-	1	20	9	1	-	1	3	16	-	3	39	-	1	1	-	-
40	Wainwright Subsistence Area	-	-	-	3	4	1	-	-	-	11	11	14	1	-	2	7	-	4	21	-	4	49	-	7
41	Barrow Subsistence Area 1	-	-	-	-	-	-	-	1	-	-	-	1	5	-	-	-	-	-	-	-	-	2	-	11
45	ERA 45	-	-	-	-	-	-	-	-	7	2	1	-	-	17	-	9	-	1	1	-	-	-	-	-
46	Herald Shoal Polynya	8	1	-	18	1	-	-	-	4	2	-	-	-	2	21	4	1	1	-	-	-	-	-	-
47	Ice/Sea Segment 10	6	3	1	17	25	4	1	-	1	10	7	2	-	1	8	3	5	18	7	2	3	2	-	-
48	Ice/Sea Segment 11	7	13	12	10	31	49	16	5	2	22	44	22	11	1	8	9	15	38	28	22	68	12	13	12
49	Hanna's Shoal Polynya	10	26	64	6	21	43	45	25	1	11	22	19	25	-	5	4	19	22	14	54	35	7	38	21
50	Ice/Sea Segment 12	1	3	2	1	5	8	6	2	-	4	14	40	13	-	1	1	3	7	5	4	41	22	5	24
51	Ice/Sea Segment 13	-	1	1	-	1	2	2	2	-	1	4	29	18	-	-	-	1	2	1	1	6	31	3	49
52	Ice/Sea Segment 14	-	-	-	-	-	-	1	17	-	-	-	3	29	-	-	-	-	-	-	-	1	2	3	9
53	Ice/Sea Segment 15	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
59	ERA 59	-	-	-	1	-	-	-	-	2	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	3	-	-	-	-	6	-	1	-	-	-	-	-	-	-	-
64	Peard Bay	-	-	-	-	-	1	1	1	-	-	1	1	2	-	-	-	-	1	-	1	1	1	1	3
70	ERA 70	-	1	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	-
99	ERA 99	2	1	-	7	13	4	1	-	1	15	19	5	1	-	5	5	2	15	21	1	6	6	-	1

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-53 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 180 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	7	5	4	16	13	7	7	10	30	30	21	23	17	37	16	33	6	12	38	5	11	38	8	27
1	Kasegaluk Lagoon	-	-	-	5	6	1	-	-	1	11	8	3	-	1	4	6	1	5	13	-	2	3	-	-
2	Point Barrow, Plover Islands	1	2	2	-	1	2	3	5	-	-	1	2	4	-	-	-	1	1	-	2	2	2	3	3
4	ERA 4	-	-	-	-	-	-	-	-	5	-	-	-	-	9	-	2	-	-	-	-	-	-	-	-
6	ERA 6	1	2	2	4	8	5	6	9	1	7	13	22	16	1	2	3	2	9	11	3	10	36	7	32
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	5	7	1	-	-	3	16	10	2	-	2	5	15	1	6	19	-	3	3	-	-
11	Wrangel Island	4	2	-	1	1	-	-	-	-	-	-	-	-	-	3	-	2	1	-	-	-	-	-	-
14	ERA 14	-	-	-	-	-	-	-	-	2	1	-	-	-	11	-	4	-	-	-	-	-	-	-	-
15	ERA 15	-	-	-	1	1	-	-	-	4	5	1	1	-	12	-	11	-	1	2	-	1	1	-	-
16	ERA 16	-	-	-	1	-	-	-	-	10	2	-	-	-	10	1	4	-	-	-	-	-	-	-	-
18	ERA 18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	2	1	-	-	-	13	-	3	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	1	1	-	-	-	1	8	3	1	-	1	1	13	-	2	6	-	1	1	-	-
21	Chukchi Spring Lead 3	-	-	-	3	4	1	-	-	1	10	7	1	-	1	3	6	-	4	18	-	1	1	-	-
22	Chukchi Spring Lead 4	1	-	-	4	6	2	-	-	1	7	12	14	1	1	3	4	1	7	11	-	5	34	-	3
23	Chukchi Spring Lead 5	-	-	-	-	-	1	1	1	-	-	2	6	5	-	-	-	-	1	1	1	2	9	1	20
24	Beaufort Spring Lead 6	-	-	-	-	-	-	1	4	-	-	-	2	5	-	-	-	-	-	-	-	1	1	1	3
25	Beaufort Spring Lead 7	-	-	-	-	-	-	1	4	-	-	-	1	4	-	-	-	-	-	-	-	1	1	1	3
26	Beaufort Spring Lead 8	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
27	Beaufort Spring Lead 9	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
30	Ice/Sea Segment 2	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-
31	Ice/Sea Segment 3	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-
32	Ice/Sea Segment 4	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
35	ERA 35	2	4	4	1	4	5	4	4	-	1	4	6	5	-	1	-	4	5	2	4	5	6	5	7
36	ERA 36	1	2	1	2	3	2	1	-	-	1	3	3	1	-	1	-	2	4	2	2	2	4	-	3
38	Pt Hope Subsistence Area	-	-	-	-	-	-	-	-	2	1	-	-	-	14	-	6	-	-	1	-	-	-	-	-
39	Point Lay Subsistence Area	1	-	-	6	7	1	-	-	2	25	13	3	-	1	6	20	1	6	42	-	2	3	-	-
40	Wainwright Subsistence Area	1	1	1	7	10	3	1	1	1	18	19	20	3	1	6	11	2	10	29	1	7	56	1	11
41	Barrow Subsistence Area 1	-	-	-	-	-	-	1	2	-	-	1	3	6	-	-	-	-	-	1	-	1	4	1	15
42	Barrow Subsistence Area 2	1	2	2	-	1	2	3	2	-	-	-	2	2	-	-	-	2	1	-	2	2	2	2	2
45	ERA 45	-	-	-	-	1	-	-	-	7	3	1	1	-	19	-	10	-	1	2	-	1	1	-	-
46	Herald Shoal Polynya	8	1	-	19	2	-	-	-	4	2	1	-	-	2	22	4	1	1	1	-	-	-	-	-
47	Ice/Sea Segment 10	7	4	2	19	28	6	1	-	2	13	10	5	1	1	9	5	7	21	10	4	7	6	-	2
48	Ice/Sea Segment 11	11	19	18	13	37	53	24	13	3	27	50	34	21	2	10	12	20	44	34	28	73	24	21	24
49	Hanna's Shoal Polynya	15	33	68	9	29	51	54	37	2	18	33	33	37	1	8	9	26	30	23	59	44	17	48	34
50	Ice/Sea Segment 12	4	6	5	3	11	12	9	4	1	8	20	46	16	1	2	3	7	14	10	8	44	30	8	28
51	Ice/Sea Segment 13	1	2	2	1	5	5	5	5	-	4	10	36	22	-	1	2	3	7	6	3	11	42	6	54
52	Ice/Sea Segment 14	1	3	4	-	1	4	6	20	-	-	2	6	32	-	-	-	2	1	-	4	4	4	7	12
53	Ice/Sea Segment 15	-	1	1	-	-	1	1	2	-	-	-	1	2	-	-	-	-	-	-	1	1	1	1	1
54	Ice/Sea Segment 16a	-	1	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
56	ERA 56	4	7	9	1	4	8	10	8	-	2	4	6	8	-	1	1	6	5	2	9	6	5	9	8
59	ERA 59	-	-	-	2	-	-	-	-	3	1	-	-	-	2	1	2	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	4	-	-	-	-	7	-	1	-	-	-	-	-	-	-	-
63	ERA 63	1	2	1	-	-	1	-	1	-	-	1	-	-	-	-	-	1	1	-	1	1	-	-	-
64	Peard Bay	1	1	2	1	3	3	4	4	-	1	4	8	7	-	1	1	1	3	2	2	5	6	5	12
66	ERA 66	-	1	1	-	-	-	-	2	-	-	-	1	1	-	-	-	-	-	-	-	-	1	-	1
70	ERA 70	1	2	2	-	2	2	3	2	-	1	2	2	2	-	-	-	2	2	2	3	2	1	2	2
99	ERA 99	4	5	3	11	20	10	4	2	2	21	26	13	4	2	9	9	7	22	26	5	13	17	3	7

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-54 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Environmental Resource Area Within 360 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
—	LAND	9	7	6	21	16	9	9	13	36	35	24	26	20	43	20	38	8	15	42	7	14	42	10	30
1	Kasegaluk Lagoon	-	-	-	5	6	1	-	-	1	11	8	3	-	1	4	6	1	5	13	-	2	3	-	-
2	Point Barrow, Plover Islands	2	3	4	1	2	3	4	6	-	1	2	3	5	-	1	1	3	2	2	4	3	3	4	3
4	ERA 4	-	-	-	-	-	-	-	-	5	-	-	-	-	9	-	2	-	-	-	-	-	-	-	-
6	ERA 6	1	2	2	4	8	5	6	9	1	7	13	23	17	1	2	3	3	9	11	3	10	36	7	33
10	Ledyard Bay Spectacled Eider Critical Habitat	-	-	-	5	7	1	-	-	3	16	10	2	-	2	5	15	1	6	19	-	3	3	-	1
11	Wrangel Island	4	2	-	1	1	-	-	-	-	-	-	-	-	-	3	-	2	1	-	-	-	-	-	-
14	ERA 14	-	-	-	-	-	-	-	-	2	1	-	-	-	11	-	4	-	-	-	-	-	-	-	-
15	ERA 15	-	-	-	1	1	-	-	-	4	5	1	1	-	12	-	11	-	1	2	-	1	1	-	-
16	ERA 16	-	-	-	2	-	-	-	-	12	2	-	-	-	12	1	5	-	-	-	-	-	-	-	-
18	ERA 18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
19	Chukchi Spring Lead 1	-	-	-	-	-	-	-	-	2	1	-	-	-	13	-	3	-	-	-	-	-	-	-	-
20	Chukchi Spring Lead 2	-	-	-	1	1	-	-	-	1	8	3	1	-	1	1	13	-	2	6	-	1	1	-	-
21	Chukchi Spring Lead 3	-	-	-	3	4	1	-	-	1	10	7	1	-	1	3	6	-	4	18	-	1	1	-	-
22	Chukchi Spring Lead 4	1	-	-	4	6	2	-	-	1	7	12	14	1	1	3	4	1	7	11	-	5	34	-	3
23	Chukchi Spring Lead 5	-	-	-	-	-	1	1	1	-	-	2	6	5	-	-	-	-	1	1	1	2	9	1	20
24	Beaufort Spring Lead 6	-	-	-	-	-	-	1	4	-	-	-	2	5	-	-	-	-	-	-	-	1	1	2	3
25	Beaufort Spring Lead 7	-	1	1	-	-	1	1	4	-	-	-	2	5	-	-	-	-	-	-	-	1	1	1	3
26	Beaufort Spring Lead 8	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
27	Beaufort Spring Lead 9	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
28	Beaufort Spring Lead 10	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Ice/Sea Segment 1	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
30	Ice/Sea Segment 2	-	1	1	-	-	1	1	1	-	-	-	-	1	-	-	-	-	-	-	1	1	-	1	-
31	Ice/Sea Segment 3	-	1	1	-	-	1	1	1	-	-	-	-	1	-	-	-	-	-	-	1	1	-	1	-
32	Ice/Sea Segment 4	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-
35	ERA 35	2	4	4	1	5	6	5	5	-	2	5	7	6	-	1	1	4	5	3	5	6	7	5	8
36	ERA 36	1	2	1	2	3	2	1	-	-	2	3	3	1	-	1	1	2	4	2	2	2	5	-	3
38	Pt. Hope Subsistence Area	-	-	-	-	-	-	-	-	2	1	-	-	-	14	-	6	-	-	1	-	-	-	-	-
39	Point Lay Subsistence Area	1	-	-	6	7	1	-	-	2	25	13	3	-	1	6	20	1	6	42	-	2	3	-	-
40	Wainwright Subsistence Area	1	1	1	7	10	3	1	1	1	18	19	20	3	1	6	11	2	10	29	1	7	56	1	12
41	Barrow Subsistence Area 1	-	-	-	-	-	-	1	2	-	-	1	3	6	-	-	-	-	-	1	-	1	4	1	15
42	Barrow Subsistence Area 2	2	3	3	1	3	3	3	3	-	1	2	3	3	-	1	1	3	2	2	3	3	2	3	2
45	ERA 45	-	-	-	-	1	-	-	-	7	3	1	1	-	19	-	10	-	1	2	-	1	1	-	-
46	Herald Shoal Polynya	8	1	-	19	2	-	-	-	4	2	1	-	-	2	22	4	1	1	2	-	-	-	-	-
47	Ice/Sea Segment 10	7	4	2	19	28	6	1	-	2	13	11	5	1	1	9	5	7	21	11	4	7	7	-	2
48	Ice/Sea Segment 11	11	20	18	13	37	54	24	14	3	28	50	35	23	2	10	12	21	44	34	28	73	25	22	25
49	Hanna's Shoal Polynya	15	33	68	10	29	51	54	38	2	19	33	33	38	1	8	9	26	31	23	60	45	18	48	34
50	Ice/Sea Segment 12	4	6	5	3	11	12	10	4	1	8	20	46	17	1	2	3	7	14	11	8	45	31	8	29
51	Ice/Sea Segment 13	2	2	2	2	6	5	5	5	-	4	10	37	22	-	1	2	3	7	7	3	12	42	6	55
52	Ice/Sea Segment 14	2	4	5	1	3	5	6	21	-	2	3	7	32	-	1	1	3	3	2	5	5	4	8	13
53	Ice/Sea Segment 15	-	1	2	-	1	2	2	4	-	1	1	1	3	-	-	-	1	1	1	2	1	1	2	2
54	Ice/Sea Segment 16a	-	1	2	-	1	1	1	2	-	-	-	-	1	-	-	-	1	1	-	2	1	-	1	1
55	Ice/Sea Segment 17	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
56	ERA 56	4	8	10	2	6	9	11	9	-	3	5	8	10	-	1	1	7	6	4	10	8	7	11	11
58	Ice/Sea Segment 20a	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
59	ERA 59	-	-	-	2	-	-	-	-	3	1	-	-	-	2	1	2	-	-	-	-	-	-	-	-
61	ERA 61	-	-	-	-	-	-	-	-	4	-	-	-	-	7	-	1	-	-	-	-	-	-	-	-
63	ERA 63	1	2	1	-	1	1	1	1	-	-	1	1	1	-	-	-	2	1	1	1	1	1	1	2
64	ERA 64	1	1	2	1	3	3	4	4	-	2	4	8	7	-	1	1	1	4	3	2	5	7	5	14
66	ERA 66	1	2	2	1	1	1	1	2	-	1	1	1	2	-	1	-	1	1	1	2	1	2	1	1
69	ERA 69	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
70	ERA 70	1	2	2	-	2	3	3	2	-	1	3	2	3	-	-	1	2	2	2	3	3	1	2	2
99	ERA 99	4	5	3	11	20	10	4	2	2	21	27	14	4	2	9	9	7	23	27	5	13	19	3	7

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-55 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 3 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-56 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 10 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	3	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	6	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	4	-	-	-	-	-
75	Akeonik, Icy Cape	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-
79	Point Belcher, Wainwright	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-57 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 30 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
27	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2	-	-	1	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	2	-	-	4	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	2	-	-	7	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	1	-	-	6	-	-	-	-	-
75	Akeonik, Icy Cape	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	3	-	-	-	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
79	Point Belcher, Wainwright	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	3	-	-
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	3	-	-
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
83	Nulavik, Loran Radio Station	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-58 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 60 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
8	E. Wrangel Island, Skeletov	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
27	Laguna Nut, Rigol'	-	-	-	1	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
30	Nutepynmin, Pyngopil'gyn	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	Mys Dzhenretlen, Eynenekvyk	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
33	Neskan, Laguna Neskan	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
37	Chegitun, Utkan	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2	-	-	1	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	3	-	-	4	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	-	1	-	-	-	-	4	1	-	-	-	1	3	-	-	8	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	1	1	-	-	-	-	3	2	-	-	-	1	2	-	1	7	-	-	-	-	-
75	Akeonik, Icy Cape	-	-	-	1	1	-	-	-	-	2	2	-	-	-	1	1	-	1	4	-	-	1	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	4	-	-
79	Point Belcher, Wainwright	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	6	-	-
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	1	5	-	1
81	Peard Bay, Point Franklin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
82	Skull Cliff	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2
83	Nulavik, Loran Radio Station	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	3
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	-	1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-59 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 180 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
7	E. Wrangel Island	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	E. Wrangel Island, Skeleton	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-
24		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
25	Ostrov Leny, Yulinu	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
26	Ekugvaam ,Kepin, Pil'khin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
27	Laguna Nut, Rigol'	1	-	-	1	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
28	Vankarem,Vankarem Laguna	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
29	Mys Onman, Vel'may	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
30	Nutepynmin, Pyngopil'gyn	-	-	-	1	-	-	-	-	1	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-
31	Alyatki, Zaliv Tasytkhin	-	-	-	1	-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
32	Mys Dzhenretlen, Eynenekvyk	-	-	-	1	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
33	Neskan, Laguna Neskan	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	3	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	-	-	-	-	-	5	1	-	-	-	5	-	2	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	3	-	-	-	-	5	-	1	-	-	-	-	-	-	-	-
37	Chegitun, Utkan	-	-	-	-	-	-	-	-	3	-	-	-	-	4	-	1	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	1	-	-	-	-	4	-	2	-	-	-	-	-	-	-	-
67	Cape Sabine, Pitmegea River	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
70	Kuchaurak Creek, Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	3	-	-	2	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	1	1	-	-	-	-	4	1	-	-	-	1	4	-	1	5	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	1	1	-	-	-	1	5	2	-	-	-	1	4	-	1	9	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	2	2	-	-	-	-	4	3	1	-	-	2	3	-	2	8	-	-	1	-	-
75	Akeonik, Icy Cape	-	-	-	2	2	-	-	-	-	3	3	1	-	-	2	2	-	1	5	-	-	1	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	1	1	-	1	1	-	-
77	Nivat Point, Nokotlek Point	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
78	Point Collie, Sigeakruk Point	-	-	-	-	1	-	-	-	-	1	2	3	-	-	-	1	-	1	2	-	1	7	-	1
79	Point Belcher, Wainwright	-	-	-	-	1	-	-	-	-	1	2	3	-	-	-	1	-	1	2	-	1	9	-	1
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	1	-	-	-	-	1	1	4	1	-	-	-	-	1	1	-	2	9	-	3
81	Peard Bay, Point Franklin	-	-	-	-	1	1	-	-	-	1	1	1	-	-	-	-	1	1	1	-	1	2	-	2
82	Skull Cliff	-	-	-	-	-	1	1	-	-	-	1	2	1	-	-	-	-	1	1	-	1	4	-	5
83	Nulavik, Loran Radio Station	-	-	-	-	1	1	1	1	-	-	1	2	2	-	-	-	-	1	-	1	1	1	1	4
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	1	1	-	-	-	2	3	-	-	-	-	-	-	-	-	1	1	5
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	2	5	-	-	-	3	7	-	-	-	-	-	-	-	1	2	3	6
86	Dease Inlet, Plover Islands	-	-	-	-	-	-	1	1	-	-	-	1	1	-	-	-	-	-	-	-	-	1	1	1
87	Igalik & Kulgurak Island	1	1	1	-	1	1	1	1	-	-	-	-	-	-	-	-	1	-	-	1	1	-	1	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-60 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Land Segment Within 360 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
7	E. Wrangel Island	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	E. Wrangel Island, Skeletov	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-
24		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
25	Ostrov Leny, Yulinu	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
26	Ekugvaam, Kepin, Pil'khin	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
27	Laguna Nut, Rigol'	1	-	-	1	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
28	Vankarem,Vankarem Laguna	-	-	-	1	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
29	Mys Onman, Vel'may	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
30	Nutepynmin, Pyngopil'gyn	-	-	-	2	-	-	-	-	2	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-
31	Alyatki, Zaliv Tasytkhin	-	-	-	1	-	-	-	-	2	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-
32	Mys Dzhenretlen, Eynenekvyk	-	-	-	1	-	-	-	-	3	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
33	Neskan, Laguna Neskan	-	-	-	1	-	-	-	-	3	-	-	-	-	2	1	1	-	-	-	-	-	-	-	-
34	Tepken, Memino	-	-	-	-	-	-	-	-	4	1	-	-	-	4	-	1	-	-	-	-	-	-	-	-
35	Enurmino, Mys Neten	-	-	-	1	-	-	-	-	5	1	-	-	-	6	-	2	-	-	-	-	-	-	-	-
36	Mys Serdtse-Kamen	-	-	-	-	-	-	-	-	4	-	-	-	-	5	-	2	-	-	-	-	-	-	-	-
37	Chegitun, Utkan	-	-	-	-	-	-	-	-	3	-	-	-	-	5	-	1	-	-	-	-	-	-	-	-
38	Enmytagyn, Inchoun, Mitkulen	-	-	-	-	-	-	-	-	2	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
39	Cape Dezhnev, Naukan, Uelen	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
64	Kukpuk River, Point Hope	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
65	Buckland, Cape Lisburne	-	-	-	-	-	-	-	-	1	-	-	-	-	4	-	2	-	-	-	-	-	-	-	-
67	Cape Sabine, Pitmegea River	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
70	Kuchaurak and Kuchiak Creek	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-
71	Kukpowruk River, Sitkok Point	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	3	-	-	2	-	-	-	-	-
72	Point Lay, Siksrikpak Point	-	-	-	1	1	-	-	-	-	4	1	-	-	-	1	4	-	1	5	-	-	-	-	-
73	Tungaich Point, Tungak Creek	-	-	-	1	1	-	-	-	1	5	2	-	-	-	1	4	-	1	9	-	-	-	-	-
74	Kasegaluk Lagoon, Solivik Isl.	-	-	-	2	2	-	-	-	-	4	3	1	-	-	2	3	-	2	8	-	-	1	-	-
75	Akeonik, Icy Cape	-	-	-	2	2	-	-	-	-	3	3	1	-	-	2	2	-	1	5	-	-	1	-	-
76	Avak Inlet, Tunalik River	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	1	1	-	1	1	-	-
77	Nivat Point, Nokotlek Point	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
78	Point Collie, Sigeakruk Point	-	-	-	1	1	-	-	-	-	2	2	3	-	-	-	1	-	1	2	-	1	7	-	1
79	Point Belcher, Wainwright	-	-	-	-	1	-	-	-	-	1	2	3	-	-	-	1	-	1	2	-	1	9	-	1
80	Eluksingiak Point, Kugrua Bay	-	-	-	-	1	-	-	-	-	1	1	4	1	-	-	-	-	1	1	-	2	10	-	3
81	Peard Bay, Point Franklin	-	-	-	-	1	1	-	-	-	1	1	1	-	-	-	-	1	1	1	-	1	2	-	2
82	Skull Cliff	-	-	-	-	-	1	1	-	-	-	1	2	1	-	-	-	-	1	1	-	1	4	-	6
83	Nulavik, Loran Radio Station	-	-	-	-	1	1	1	1	-	-	1	2	2	-	-	-	-	1	-	1	1	1	1	4
84	Will Rogers & Wiley Post Mem.	-	-	-	-	-	-	1	1	-	-	-	2	3	-	-	-	-	-	-	-	-	1	1	5
85	Barrow, Browerville, Elson Lag.	-	-	-	-	-	-	2	5	-	-	1	4	7	-	-	-	-	-	-	-	1	3	3	6
86	Dease Inlet, Plover Islands	-	-	-	-	-	-	1	1	-	-	-	1	1	-	-	-	-	-	-	-	1	1	1	1
87	Igalik & Kulgurak Island	2	2	2	1	1	2	1	1	-	1	1	1	1	-	1	-	2	1	1	2	2	-	1	1
88	Cape Simpson, Piasuk River	1	1	1	-	1	1	-	1	-	-	-	-	-	-	-	-	1	-	1	1	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-61 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 3 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
96	United States Chukchi Coast	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	5	-	-	1	-	1

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-62 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 10 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2
96	United States Chukchi Coast	-	-	-	-	-	-	-	-	-	3	2	1	1	3	-	2	-	-	14	-	-	3	-	3
97	United States Beaufort Coast	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-63 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segment Within 30 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	-	-	4	-	3
90	Kasegaluk Lagoon Special Use Area	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
95	Russia Chukchi Coast	1	-	-	1	-	-	-	-	3	-	-	-	-	5	2	1	-	-	-	-	-	-	-	-
96	United States Chukchi Coast	-	-	-	1	1	-	-	-	1	11	6	3	2	4	1	10	-	1	21	-	1	9	-	5
97	United States Beaufort Coast	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-64 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 60 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	1	-	-	-	-	3	-	1	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	-	-	-	-	1	1	-	-	-	1	2	3	1	-	-	-	-	1	1	-	2	7	-	5
90	Kasegaluk Lagoon Special Use Area	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	1	-	-	1	-	-
95	Russia Chukchi Coast	2	1	-	3	-	-	-	-	8	1	-	-	-	9	3	3	1	-	-	-	-	-	-	-
96	United States Chukchi Coast	-	-	-	3	4	1	-	1	2	17	9	7	3	5	3	16	-	4	27	-	3	17	1	8
97	United States Beaufort Coast	-	-	-	-	-	-	-	1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-65 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 180 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Natural World Heritage Site	2	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	1	-	-	-	-	4	-	2	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	2	3	3	2	5	4	4	3	-	3	6	11	6	-	1	1	3	5	5	4	7	17	4	14
90	Kasegaluk Lagoon Special Use Area	-	-	-	1	1	-	-	-	-	1	1	1	-	-	-	-	-	1	2	-	1	1	-	-
95	Russia Chukchi Coast	5	2	-	8	1	1	-	-	26	3	1	-	-	29	8	10	3	1	-	-	1	-	-	-
96	United States Chukchi Coast	1	1	1	8	11	4	3	3	4	27	20	19	8	8	8	24	2	11	37	2	9	35	3	20
97	United States Beaufort Coast	1	2	2	-	1	2	4	7	-	-	1	4	8	-	-	-	1	1	-	2	2	3	5	7

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-66 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Group of Land Segments Within 360 Days, Chukchi Sale 193

ID	Land Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
84	Wrangel Is Nat Res Nat World Heritage Site	2	1	-	1	1	-	-	1	-	-	-	1	-	-	1	-	2	1	-	-	-	1	-	-
88	Alaska Maritime National Wildlife Refuge	-	-	-	-	-	-	-	-	1	-	-	-	-	4	-	2	-	-	-	-	-	-	-	-
89	National Petroleum Reserve Alaska	3	4	4	3	7	6	5	5	-	5	9	13	7	-	2	2	4	8	7	5	9	20	5	16
90	Kasegaluk Lagoon Special Use Area	-	-	-	1	1	-	-	-	-	1	1	1	-	-	-	-	-	1	2	-	1	1	-	-
91	Teshekpuk Lake Special Use Area	-	-	-	-	1	-	-	1	-	-	-	-	1	-	-	-	-	1	-	-	-	-	1	-
95	Russia Chukchi Coast	6	2	-	12	2	1	-	1	32	5	1	1	1	34	11	13	3	1	1	1	1	1	-	-
96	United States Chukchi Coast	1	1	1	8	12	5	3	3	4	28	21	20	9	8	8	24	2	11	39	2	9	37	3	21
97	United States Beaufort Coast	2	3	4	1	3	4	6	9	-	2	3	6	10	-	1	1	3	3	2	4	4	5	6	9

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-67 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 3 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11

Notes- All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A.2-68 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 10 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11

Notes- All boundary segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A.2-69 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 30 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
16	Chukchi Sea	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
18	Chukchi Sea	1	3	4	-	1	2	2	1	-	-	1	-	-	-	-	-	2	2	-	4	1	-	1	-
19	Chukchi Sea	1	3	4	-	1	2	2	2	-	-	1	-	1	-	-	-	2	1	-	3	1	-	2	-
20	Chukchi Sea	1	2	3	-	1	1	1	1	-	-	-	-	-	-	-	-	1	1	-	2	-	-	1	-
21	Chukchi Sea	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	Chukchi Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-70 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 60 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
15	Chukchi Sea	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
16	Chukchi Sea	1	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	2	1	-	1	-	-	-	-
17	Chukchi Sea	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	1	-
18	Chukchi Sea	5	9	10	1	5	8	7	4	-	2	5	3	3	-	1	-	6	5	3	10	6	1	6	3
19	Chukchi Sea	5	11	12	1	5	9	9	5	-	2	3	3	5	-	1	1	9	5	2	11	5	-	7	3
20	Chukchi Sea	2	5	7	-	4	5	6	6	-	1	2	2	3	-	-	-	4	4	1	6	4	-	6	2
21	Chukchi Sea	-	1	2	-	1	1	2	2	-	-	-	-	1	-	-	-	1	1	-	2	1	-	2	-
22	Chukchi Sea	-	-	1	-	-	1	1	2	-	-	-	-	1	-	-	-	-	-	-	1	-	-	1	-
23	Beaufort Sea	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1
24	Beaufort Sea	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-
25	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-71 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 180 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
15	Chukchi Sea	2	2	2	-	1	1	1	-	-	-	1	-	1	-	-	-	2	1	-	2	1	-	1	1
16	Chukchi Sea	2	3	1	-	2	2	1	-	-	1	1	1	1	-	-	1	3	1	1	1	1	-	1	1
17	Chukchi Sea	2	2	2	1	1	1	1	1	-	1	1	1	1	-	1	1	2	1	1	2	1	1	1	1
18	Chukchi Sea	7	11	13	2	7	10	9	6	-	5	7	5	5	-	2	2	9	8	5	12	9	3	8	5
19	Chukchi Sea	10	16	17	4	12	16	16	10	-	7	10	9	11	-	3	3	14	12	6	17	13	5	15	9
20	Chukchi Sea	5	10	13	1	8	11	12	11	-	4	6	6	8	-	1	1	9	8	5	12	9	3	12	7
21	Chukchi Sea	1	2	2	-	2	2	3	3	-	1	1	2	2	-	-	-	1	2	1	2	2	1	3	1
22	Chukchi Sea	-	-	1	-	-	1	1	3	-	-	1	1	1	-	-	-	-	1	1	1	1	2	2	-
23	Beaufort Sea	-	-	1	-	-	1	1	2	-	-	-	-	1	-	-	-	-	-	-	1	1	-	1	1
24	Beaufort Sea	-	-	-	-	-	-	1	2	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	1
25	Beaufort Sea	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-
27	Beaufort Sea	-	-	1	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	1	-	-	1	1
28	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-72 Winter Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact a Certain Boundary Segment Within 360 Days, Chukchi Sale 193

ID	Boundary Segment Name	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11
2	Bering Strait	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
15	Chukchi Sea	2	2	2	-	1	1	1	-	-	-	1	-	1	-	-	-	2	1	-	2	1	-	1	1
16	Chukchi Sea	2	3	1	-	2	2	1	-	-	1	1	1	1	-	-	1	3	1	1	1	1	-	1	1
17	Chukchi Sea	2	2	2	1	1	1	1	1	-	1	1	1	1	-	1	1	2	1	1	2	1	1	1	1
18	Chukchi Sea	7	12	13	2	7	10	9	6	-	5	8	6	6	-	2	2	9	8	5	12	9	4	8	6
19	Chukchi Sea	10	17	18	4	12	16	17	10	-	7	10	10	11	-	3	3	15	12	6	18	14	5	16	10
20	Chukchi Sea	5	10	13	1	9	11	12	11	-	4	6	6	8	-	1	1	9	9	5	12	9	3	12	7
21	Chukchi Sea	1	2	3	-	2	2	3	4	-	1	2	2	2	-	-	-	2	3	1	2	2	1	3	1
22	Chukchi Sea	-	-	1	-	-	1	2	3	-	-	1	1	2	-	-	-	-	1	1	1	1	2	2	1
23	Beaufort Sea	1	1	2	1	1	2	3	4	-	1	1	1	3	-	-	-	1	2	1	2	2	1	3	2
24	Beaufort Sea	-	1	1	-	1	1	2	3	-	-	1	1	2	-	-	-	1	1	1	1	1	1	2	1
25	Beaufort Sea	-	-	-	-	-	-	-	2	-	-	1	-	1	-	-	-	-	1	-	-	-	-	-	-
26	Beaufort Sea	-	1	1	-	1	1	1	2	-	-	1	1	1	-	-	-	-	1	-	1	1	1	1	1
27	Beaufort Sea	-	-	1	-	-	1	2	2	-	-	-	1	2	-	-	-	-	-	-	1	1	1	1	1
28	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	Beaufort Sea	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent; LA = Launch Area, P = Pipeline. Rows with all values less than 0.5 percent are not shown.

Table A.2-73 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 3 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
	Land	1	0.01	-	-	-	-
6	ERA 6	1	0.01	1	0.01	1	0.1
10	Ledyard Bay Spectacled Eider Critical Habitat	4	0.04	2	0.02	3	0.3
14	ERA 14	1	0.01	-	-	-	-
15	ERA 15	2	0.02	1	0.01	1	0.01
20	Chukchi Spring Lead 2	1	0.01	-	-	-	-
21	Chukchi Spring Lead 3	1	0.01	-	-	1	0.01
35	ERA 35	1	0.01	1	0.01	1	0.01
36	ERA 36	3	0.03	2	0.02	2	0.02
39	Point Lay Subsistence Area	2	0.02	1	0.01	2	0.02
40	Wainwright Subsistence Area	1	0.01	1	0.01	1	0.01
45	ERA 45	1	0.01	-	-	1	0.01
47	Ice/Sea Segment 10	1	0.01	1	0.01	1	0.01
48	Ice/Sea Segment 11	1	0.01	1	0.01	1	0.01
50	Ice/Sea Segment 12	1	0.01	1	0.01	1	0.01
51	Ice/Sea Segment 13	1	0.01	-	-	-	-
56	ERA 56	1	0.01	1	0.01	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-74 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 10 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
	Land	3	0.03	1	0.01	2	0.02
1	Kasegaluk Lagoon	1	0.01	1	0.01	1	0.01
6	ERA 6	1	0.01	1	0.01	1	0.01
10	Ledyard Bay Spectacled Eider Critical Habitat	5	0.05	3	0.03	4	0.04
14	ERA 14	1	0.01	-	-	-	-
15	ERA 15	2	0.02	1	0.01	2	0.02
18	ERA 18	1	0.01	-	-	-	-
20	Chukchi Spring Lead 2	1	0.01	-	-	1	0.01
21	Chukchi Spring Lead 3	1	0.01	1	0.01	1	0.01
22	Chukchi Spring Lead 4	1	0.01	-	-	1	0.01
35	ERA 35	2	0.02	1	0.01	1	0.01
36	ERA 36	3	0.03	2	0.02	3	0.03
38	Point Hope Subsistence Area	1	0.01	-	-	-	-
39	Point Lay Subsistence Area	3	0.03	2	0.02	3	0.03
40	Wainwright Subsistence Area	2	0.02	1	0.01	2	0.02
45	ERA 45	1	0.01	1	0.01	1	0.01
47	Ice/Sea Segment 10	1	0.02	1	0.01	1	0.01
48	Ice/Sea Segment 11	3	0.03	3	0.03	3	0.03
49	Hanna's Shoal Polynya	1	0.01	1	0.01	1	0.01
50	Ice/Sea Segment 12	1	0.01	1	0.01	1	0.01
51	Ice/Sea Segment 13	1	0.01	1	0.01	1	0.01
56	ERA 56	1	0.01	1	0.01	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-75 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 30 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
	Land	7	0.07	3	0.03	5	0.05
1	Kasegaluk Lagoon	2	0.02	1	0.01	2	0.02
6	ERA 6	3	0.03	2	0.02	2	0.02
10	Ledyard Bay Spectacled Eider Critical Habitat	7	0.07	3	0.03	5	0.05
14	ERA 14	1	0.01	-	-	1	0.01
15	ERA 15	3	0.03	1	0.01	2	0.02
18	ERA 18	2	0.02	1	0.01	2	0.02
20	Chukchi Spring Lead 2	1	0.01	1	0.01	1	0.01
21	Chukchi Spring Lead 3	2	0.02	1	0.01	1	0.01
22	Chukchi Spring Lead 4	1	0.01	1	0.01	1	0.01
35	ERA 35	2	0.02	1	0.01	2	0.02
36	ERA 36	5	0.05	3	0.03	4	0.04
38	Point Hope Subsistence Area	1	0.01	-	-	1	0.01
39	Point Lay Subsistence Area	5	0.05	3	0.03	4	0.04
40	Wainwright Subsistence Area	4	0.04	3	0.03	4	0.04
45	ERA 45	3	0.03	1	0.01	2	0.02
46	Herald Shoal Polynya	1	0.01	1	0.01	1	0.01
47	Ice/Sea Segment 10	3	0.03	2	0.02	3	0.03
48	Ice/Sea Segment 11	6	0.06	5	0.06	6	0.06
49	Hanna's Shoal Polynya	3	0.03	3	0.03	3	0.03
50	Ice/Sea Segment 12	3	0.03	2	0.02	3	0.03
51	Ice/Sea Segment 13	2	0.02	1	0.01	2	0.02
52	Ice/Sea Segment 14	1	0.01	-	-	-	-
56	ERA 56	2	0.02	2	0.02	2	0.02
64	Peard Bay	1	0.01	-	-	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-76 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 60 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
	Land	9	0.1	5	0.05	7	0.08
1	Kasegaluk Lagoon	3	0.03	2	0.02	3	0.03
6	ERA 6	4	0.04	2	0.02	3	0.03
10	Ledyard Bay Spectacled Eider Critical Habitat	8	0.08	4	0.04	6	0.06
14	ERA 14	1	0.01	1	0.01	1	0.01
15	ERA 15	4	0.04	2	0.02	3	0.03
18	ERA 18	3	0.03	1	0.01	2	0.02
20	Chukchi Spring Lead 2	2	0.02	1	0.01	1	0.01
21	Chukchi Spring Lead 3	2	0.02	1	0.01	2	0.02
22	Chukchi Spring Lead 4	2	0.02	1	0.01	2	0.02
35	ERA 35	3	0.03	2	0.02	3	0.03
36	ERA 36	5	0.05	3	0.03	5	0.05
38	Point Hope Subsistence Area	1	0.01	1	0.01	1	0.01
39	Point Lay Subsistence Area	6	0.07	4	0.04	5	0.05
40	Wainwright Subsistence Area	6	0.06	4	0.04	5	0.05
45	ERA 45	3	0.03	1	0.01	2	0.02
46	Herald Shoal Polynya	2	0.02	1	0.01	1	0.01
47	Ice/Sea Segment 10	4	0.04	3	0.03	3	0.04
48	Ice/Sea Segment 11	8	0.09	7	0.07	8	0.08
49	Hanna's Shoal Polynya	6	0.06	4	0.05	5	0.05
50	Ice/Sea Segment 12	4	0.04	3	0.03	4	0.04
51	Ice/Sea Segment 13	3	0.03	2	0.02	2	0.03
52	Ice/Sea Segment 14	1	0.01	-	0.00	1	0.01
56	ERA 56	3	0.03	2	0.02	2	0.03
64	Peard Bay	1	0.01	1	0.01	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-77 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 180 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
	Land	13	0.14	7	0.07	10	0.11
1	Kasegaluk Lagoon	4	0.04	2	0.02	3	0.03
6	ERA 6	5	0.06	4	0.04	5	0.05
10	Ledyard Bay Spectacled Eider Critical Habitat	8	0.09	5	0.05	7	0.07
14	ERA 14	1	0.02	1	0.01	1	0.01
15	ERA 15	4	0.04	2	0.02	3	0.03
16	ERA 16	1	0.01	1	0.01	2	0.02
18	ERA 18	3	0.03	1	0.01	1	0.01
20	Chukchi Spring Lead 2	2	0.02	1	0.01	2	0.02
21	Chukchi Spring Lead 3	2	0.02	2	0.02	2	0.02
22	Chukchi Spring Lead 4	3	0.03	1	0.01	2	0.02
23	Chukchi Spring Lead 5	1	0.01	-	0.00	1	0.01
35	ERA 35	4	0.04	3	0.03	4	0.04
36	ERA 36	6	0.06	4	0.04	5	0.05
38	Point Hope Subsistence Area	1	0.01	1	0.01	1	0.01
39	Point Lay Subsistence Area	7	0.08	4	0.04	6	0.06
40	Wainwright Subsistence Area	7	0.08	5	0.05	6	0.07
45	ERA 45	3	0.03	1	0.01	2	0.02
46	Herald Shoal Polynya	2	0.02	1	0.01	2	0.02
47	Ice/Sea Segment 10	4	0.04	3	0.03	4	0.04
48	Ice/Sea Segment 11	10	0.11	8	0.08	10	0.10
49	Hanna's Shoal Polynya	8	0.09	6	0.07	8	0.08
50	Ice/Sea Segment 12	5	0.05	4	0.04	5	0.05
51	Ice/Sea Segment 13	4	0.04	3	0.03	4	0.04
52	Ice/Sea Segment 14	1	0.01	1	0.01	1	0.01
56	ERA 56	4	0.04	3	0.03	4	0.04
64	Peard Bay	2	0.02	1	0.01	2	0.02
70	ERA 70	1	0.01	-	0.00	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-78 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Environmental Resource over the assumed Production Life of the Lease Area Within 360 Days, Chukchi Sale 193

ID	Environmental Resource Area Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
	Land	14	0.15	8	0.08	11	0.12
1	Kasegaluk Lagoon	4	0.04	2	0.02	3	0.03
	Barrow Plover Islands	1	0.01	1	0.01	1	0.01
6	ERA 6	6	0.06	4	0.04	5	0.05
10	Ledyard Bay Spectacled Eider Critical Habitat	8	0.09	5	0.05	7	0.07
14	ERA 14	1	0.02	1	0.01	1	0.01
15	ERA 15	4	0.04	2	0.02	3	0.03
16	ERA 16	1	0.01	-	0.00	1	0.01
18	ERA 18	3	0.03	1	0.01	2	0.02
20	Chukchi Spring Lead 2	2	0.02	1	0.01	1	0.01
21	Chukchi Spring Lead 3	2	0.02	1	0.01	2	0.02
22	Chukchi Spring Lead 4	3	0.03	2	0.02	2	0.02
23	Chukchi Spring Lead 5	1	0.01	-	0.00	1	0.01
35	ERA 35	4	0.04	3	0.03	4	0
36	ERA 36	6	0.06	4	0.04	5	0.05
38	Point Hope Subsistence Area	1	0.01	1	0.01	1	0.01
39	Point Lay Subsistence Area	7	0.08	4	0.04	6	0.06
40	Wainwright Subsistence Area	8	0.08	5	0.05	6	0.07
42	Barrow Subsistence Area 2	1	0.01	1	0.01	1	0.01
45	ERA 45	3	0.03	1	0.01	2	0.02
46	Herald Shoal Polynya	2	0.02	1	0.01	2	0.02
47	Ice/Sea Segment 10	4	0.05	3	0.03	4	0.04
48	Ice/Sea Segment 11	10	0.11	8	0.08	10	0.1
49	Hanna's Shoal Polynya	9	0.09	7	0.07	8	0.08
50	Ice/Sea Segment 12	5	0.06	4	0.04	5	0.05
51	Ice/Sea Segment 13	4	0.05	3	0.03	4	0.04
52	Ice/Sea Segment 14	2	0.02	1	0.01	1	0.01
56	ERA 56	4	0.04	3	0.03	4	0.04
64	Peard Bay	2	0.02	1	0.01	2	0.02
70	ERA 70	1	0.01	1	0.00	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-79 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 3 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean

Notes- All land segments have all values less than 0.5%; therefore the data are not shown and the tables are left blank.

Table A.2-80 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 10 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
73	Tungaich Point, Tungak Creek	1	0.01	-	0.00	-	0.00

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-81 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 30 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
72	Point Lay, Siksrikpak Point	1	0.01	-	0.00	1	0.01
73	Tungaich Point, Tungak Creek	1	0.01	1	0.01	1	0.01
74	Kasegaluk Lagoon, Solivik Isl.	1	0.01	-	0.00	1	0.01
75	Akeonik, Icy Cape	1	0.01	-	0.00	-	0.00

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-82 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 60 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
71	Kukpowruk River, Sitkok Point	1	0.01	-	0.00	-	0.00
72	Point Lay, Siksrikpak Point	1	0.01	1	0.01	1	0.01
73	Tungaich Point, Tungak Creek	1	0.01	1	0.01	1	0.01
74	Kasegaluk Lagoon, Solivik Isl.	1	0.01	-	0.00	1	0.01
75	Akeonik, Icy Cape	1	0.01	-	0.00	-	0.00

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-83 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 180 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
65	Buckland, Cape Lisburne	1	0.01	-	0.00	-	0.00
71	Kukpowruk River, Sitkok Point	1	0.01	-	0.00	-	0.00
72	Point Lay, Siksrikpak Point	1	0.01	1	0.01	1	0.01
73	Tungaich Point, Tungak Creek	1	0.01	1	0.01	1	0.01
74	Kasegaluk Lagoon, Solivik Isl.	1	0.01	1	0.01	1	0.01
75	Akeonik, Icy Cape	1	0.01	1	0.01	1	0.01
78	Point Collie, Sigeakruk Point	1	0.01	-	0.00	1	0.01
79	Point Belcher, Wainwright	1	0.01	1	0.01	1	0.01
80	Eluksingiak Point, Kugrua Bay	1	0.01	-	0.00	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-84 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Land Segment over the Assumed Production Life of the Lease Area Within 360 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
65	Buckland, Cape Lisburne	1	0.01	-	0.00	-	0.00
71	Kukpowruk River, Sitkok Point	1	0.01	-	0.00	-	0.00
72	Point Lay, Siksrikpak Point	1	0.01	1	0.01	1	0.01
73	Tungaich Point, Tungak Creek	1	0.01	1	0.01	1	0.01
74	Kasegaluk Lagoon, Solivik Isl.	1	0.01	1	0.01	1	0.01
75	Akeonik, Icy Cape	1	0.01	1	0.01	1	0.01
78	Point Collie, Sigeakruk Point	1	0.01	-	0.00	1	0.01
79	Point Belcher, Wainwright	1	0.01	1	0.01	1	0.01
80	Eluksingiak Point, Kugrua Bay	1	0.01	-	0	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-85 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Group of Land Segments over the Assumed Production Life of the Lease Area Within 3 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
96	United States Chukchi Coast	1	0.01	-	-	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-86 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Group of Land Segments over the Assumed Production Life of the Lease Area Within 10 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
96	United States Chukchi Coast	2	0.02	1	0.01	2	0.02

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-87 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Group of Land Segments over the Assumed Production Life of the Lease Area Within 30 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
89	National Petroleum Reserve Alaska	1	0.01	-	-	1	0.01
95	Russia Chukchi Coast	1	0.01	-	-	-	-
96	United States Chukchi Coast	6	0.06	3	0.03	5	0.05

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-88 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Group of Land Segments over the Assumed Production Life of the Lease Area Within 60 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
89	National Petroleum Reserve Alaska	1	0.01	1	0.01	1	0.01
95	Russia Chukchi Coast	1	0.01	-	-	1	0.01
96	United States Chukchi Coast	8	0.08	4	0.04	6	0.06

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-89 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Group of Land Segments over the Assumed Production Life of the Lease Area Within 180 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
88	Alaska Maritime NWR	1	0.01	-	-	-	-
89	National Petroleum Reserve Alaska	2	0.02	2	0.02	2	0.02
95	Russia Chukchi Coast	2	0.02	1	0.01	1	0.01
96	United States Chukchi Coast	11	0.11	6	0.06	9	0.09
97	United States Beaufort Coast	1	0.01	-	-	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-90 Combined Probabilities (Expressed as Percent Chance) of One or More Spills Greater than or Equal to 1,000 Barrels, and the Estimated Number of Spills (Mean), Occurring and Contacting a Certain Group of Land Segments over the Assumed Production Life of the Lease Area Within 360 Days, Chukchi Sale 193

ID	Land Segment Name	Alternative I Proposal		Alternative III Corridor I		Alternative IV Corridor II	
		Percent	Mean	Percent	Mean	Percent	Mean
88	Alaska Maritime NWR	1	0.01	-	0.00	-	0.00
89	National Petroleum Reserve Alaska	3	0.03	2	0.02	3	0.03
95	Russia Chukchi Coast	3	0.03	1	0.01	2	0.02
96	United States Chukchi Coast	11	0.11	6	0.06	9	0.09
97	United States Beaufort Sea Coast	1	0.01	1	0.01	1	0.01

Notes- ** = Greater than 99.5 percent; - = less than 0.5 percent. Rows with all values less than 0.5 percent are not shown.

Table A.2-91 Range of Annual Conditional Probabilities (Expressed as Percent Chance) that an Oil Spill Starting at a Particular Location Will Contact Russian Waters Within 3, 10, 30, 60, 180 and 360 Days, Chukchi Sale 193

Days	LA 1	LA 2	LA 3	LA 4	LA 5	LA 6	LA 7	LA 8	LA 9	LA 10	LA 11	LA 12	LA 13
3	<0.5-3	<0.5-3	<0.50	<0.5-4	<0.5-1	<0.5	<0.5	<0.5	<0.5-4	<0.5	<0.5	<0.5	<0.5-0
10	<0.5-6	<0.5-2	<0.5-1	<0.5-8	<0.5-1	<0.5-1	<0.5-0	<0.5-0	<0.5-9	<0.5-1	<0.5	<0.5	<0.5
30	<0.5-8	<0.5-4	<0.5-1	<0.5-11	<0.5-2	<0.5-1	<0.5-1	<0.5-0	<0.5-12	<0.5-3	<0.5-1	<0.5-1	<0.5
60	<0.5-9	<0.5-5	<0.5-2	<0.5-11	<0.5-3	<0.5-2	<0.5-1	<0.5-1	<0.5-12	<0.5-4	<0.5-1	<0.5-1	<0.5-1
180	<0.5-10	<0.5-6	<0.5-3	<0.5-12	<0.5-3	<0.5-3	<0.5-2	<0.5-1	<0.5-12	<0.5-4	<0.5-2	<0.5-2	<0.5-2
360	<0.5-10	<0.5-6	<0.5-4	<0.5-12	<0.5-3	<0.5-3	<0.5-4	<0.5-2	<0.5-12	<0.5-4	<0.5-2	<0.5-2	<0.5-2